United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Ohio Department of Natural Resources, Division of Soil and Water Conservation; Ohio Agricultural Research and Development Center; Ohio State University Extension; Clinton Soil and Water Conservation District; and Clinton County Commissioners

Soil Survey of Clinton County, Ohio

How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

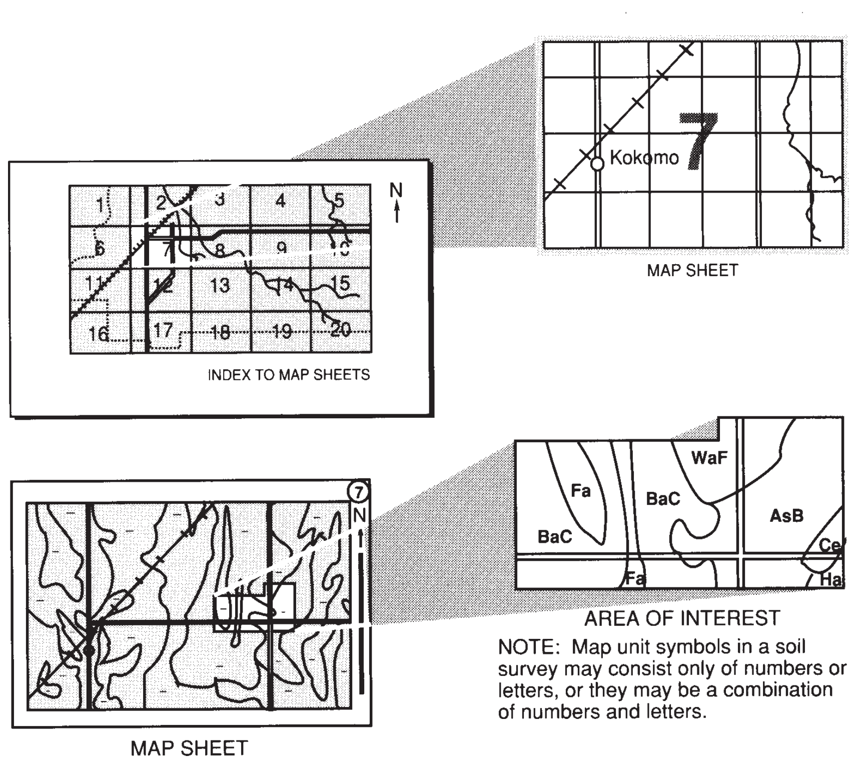
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1997. Soil names and descriptions were approved in 1998. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1997. This survey was made cooperatively by the Natural Resources Conservation Service; the Ohio Department of Natural Resources, Division of Soil and Water Conservation; the Ohio Agricultural Research and Development Center; the Ohio State University Extension; the Clinton Soil and Water Conservation District; and the Clinton County Commissioners. The survey is part of the technical assistance furnished to the Clinton Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Farmstead on a grain farm in an area of the Kokomo-Crosby-Celina general soil map unit.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued 2005

Foreword

This soil survey contains information that affects land use planning in Clinton County. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Ohio State University Extension.

Terry J. Cosby
State Conservationist
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Soil Survey of Clinton County, Ohio

By Terrence E. Lucht, Stephen J. Hamilton, and Matthew H. Deaton, Ohio Department of Natural Resources, Division of Soil and Water Conservation, and Doug B. Dotson and John Allen, Natural Resources Conservation Service

Fieldwork by Terrence E. Lucht and Stephen J. Hamilton, Ohio Department of Natural Resources, Division of Soil and Water Conservation

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
Ohio Department of Natural Resources, Division of Soil and Water Conservation; Ohio Agricultural Research and Development Center; Ohio State University Extension; Clinton Soil and Water Conservation District; and Clinton County Commissioners

CLINTON COUNTY is in the southwestern part of Ohio (fig. 1). It is adjacent to Greene and Fayette Counties on the north, Fayette County on the east, Highland County on the southeast, Brown and Clermont Counties on the south, and Warren County on the west. It has an area of about 263,885 acres, or about 412 square miles. Wilmington, the county seat, is near the center of the county. In 1990, the population of the county was 35,415 *(39)*.

Most of the county is used for farming. The main enterprises are cash-grain farming and some hog production *(36)*. The county is presently diversifying its economy. Instead of relying mainly on agriculture and its supporting industry, the county now includes service, light manufacturing, and transportation industries.

In nearly all areas that are used as farmland, the wetter soils have been drained to improve crop production. Most soils are well suited or moderately well suited to field crops, pasture, and woodland. Most of the soils in Clinton County are covered by windblown material called loess. Wetness is a major limitation affecting the use of many soils in the county. The hazard of erosion is generally severe on sloping to steep soils on the moraines and along stream valleys.

This soil survey updates the survey of Clinton County, Ohio, published in 1962 *(30)*. It provides additional data and soil interpretations.

General Nature of the County

This section gives general information about the county. It describes history; physiography, relief, and drainage; glacial geology; bedrock geology; industry and transportation; and climate.

History

Prior to settlement by European immigrants, native American tribes occupied some of the better drained sites along the streams. Major Indian trails crossed the survey

Figure 1.—Location of Clinton County in Ohio.

area, generally following the crests of the glacial moraines, which were higher and better drained than most of the surrounding land.

The first settlers came to the survey area in 1797, mostly from Kentucky, Pennsylvania, and North Carolina. The early trails and roads also followed the higher, better drained ground. The early settlers cultivated the higher ground of the moraines, the well drained terraces, and the sloping uplands adjacent to streams. They cleared forests and drained the best soils for farming. Gradually the flatter, more poorly drained parts of the county were also used for agriculture *(17)*.

By 1820, the population had grown to 8,085, and by 1880 it was 27,539. The town of Clinton, which was later renamed Wilmington, was platted in 1810 and became the county seat. The first Clinton County Courthouse was completed in 1813, and the first jail was built in 1811. Wilmington College, a private, Quaker college, was established in 1871 *(17)*.

Physiography, Relief, and Drainage

The land surface of Clinton County falls into five general divisions: (1) nearly level flood plains and low alluvial terraces of the stream valleys; (2) slightly higher, nearly level and gently undulating benches or outwash deposits of the glacial valleys; (3) rolling to steep valley walls, produced either by stream dissection or constructive morainal deposits; (4) predominantly undulating divides of the general upland level (mainly on the till plains); and (5) recessional or end moraines that are above the general upland level *(15, 30)*.

Relief ranges from nearly level to very steep, but the land surface is predominantly undulating. Nearly level areas occur principally on flood plains, on outwash plains, on stream terraces, and on upland depressions and flats on the till plains. Hilly to steep or very steep areas occur most extensively along the valley walls of the major drainageways and on the moraines. These hilly to steep or very steep areas are in Vernon and Adams Townships, along Todd Fork, and in Chester Township, along the Warren County line.

The highest elevation in the county, about 1,190 feet above mean sea level, is in Green Township, about 1 mile north of New Vienna. The lowest elevation, about 790 feet, is in Vernon Township near Clarksville, where Todd Fork enters Warren County *(30)*.

There are no major rivers in Clinton County. The Reesville Moraine, located in the northeast quarter of the county, is the drainage divide between the Scioto River to the

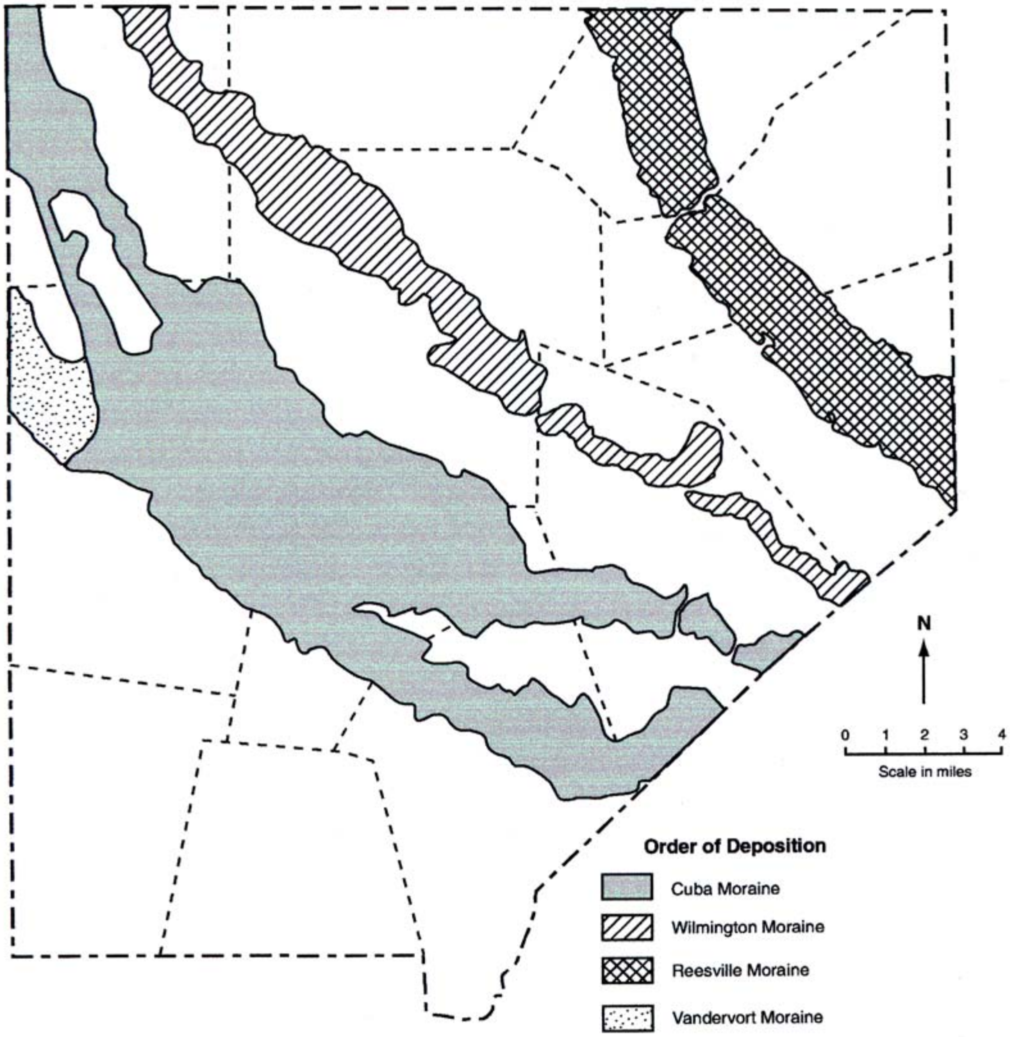

Figure 2.—Glacial moraines of Clinton County.

east and the Little Miami River to the west. The major streams, which all head water in Clinton County, are Todd Fork and its tributaries. All drainage is mostly natural, except for some channelization for the improvement of drainage and some tile outlets *(26)*.

Glacial Geology

Clinton County lies entirely within the glaciated region of Ohio. Three-fourths of the county is within the Indiana and Ohio Till Plain (Major Land Resource Area 111). The southwestern portion of the county is in the Southern Illinois and Indiana Thin Loess and Till Plain (Major Land Resource Area 114). The local name for this area is “pin-oak flats” *(30)*.

Clinton County was glaciated more than once. The deposits of the older Illinoian ice advance are separated from the later Wisconsinan ice advance by the Cuba and Vandervort terminal moraines. These moraines traverse the county from north of Clarksville to New Vienna.

The Reesville moraine, in the northeastern part of the county, is a major landform that creates a drainage divide between the Scioto and Little Miami Rivers. Passing north and east of the city of Wilmington is the Wilmington moraine *(10, 15, 22, 27, 36)*. See figure 2.

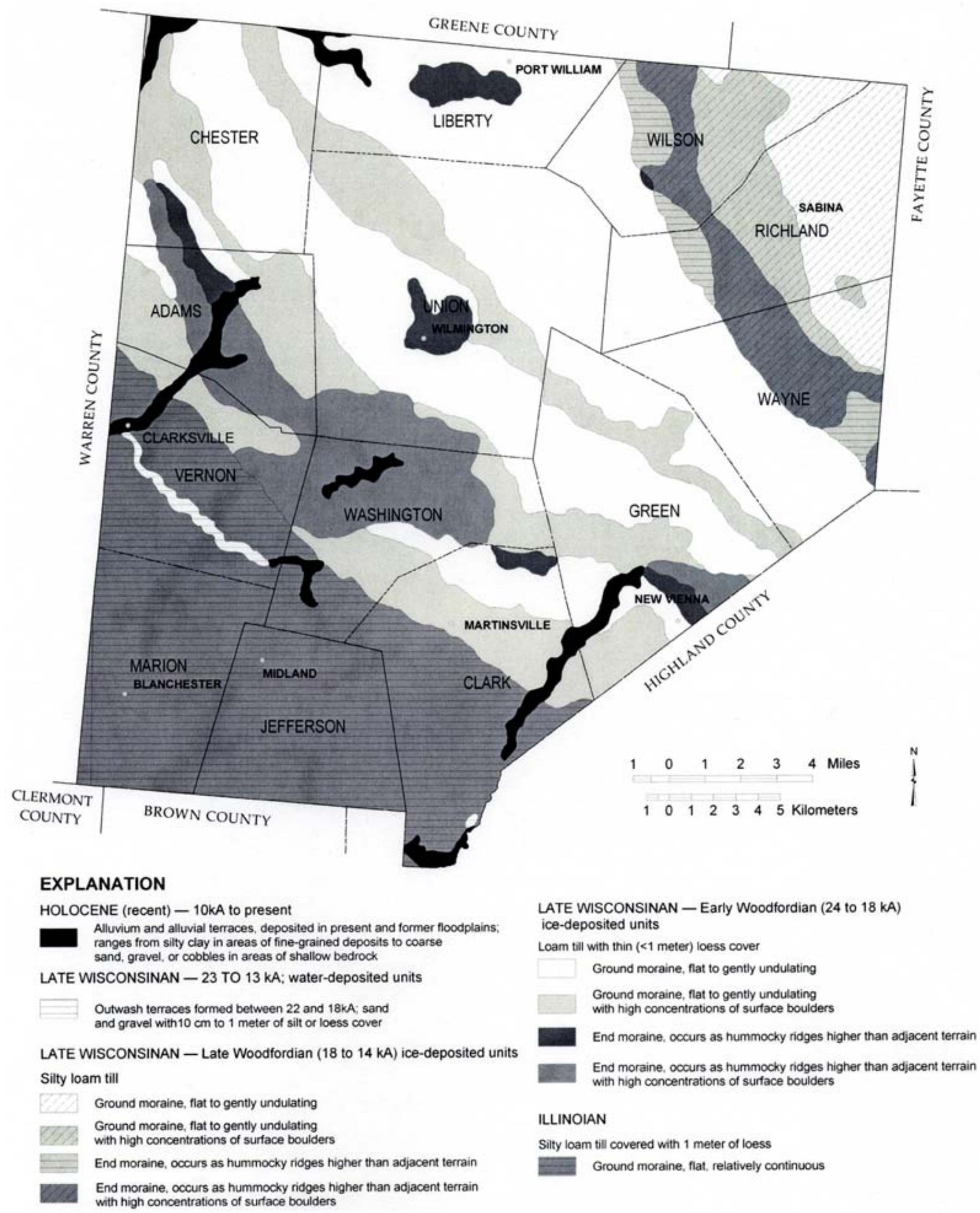

Figure 3.—Glacial Geology Map of Clinton County *(22)*. Scale is 1:500,000.

There are two dominant types of glacial deposits in the county. One is till which consists largely of clay, mixed with boulders, gravel, sand, and silt. This unsorted material is deposited directly by glacial ice. Till deposited by ice, whose terminus remains stationary for a time, results in a thicker and higher accumulation. Such topography is more continuous and ridge like and is referred to as an end moraine. Outwash is the second type of glacial deposit. It consists of stratified sand and gravel that were sorted and deposited by running meltwater from the glacial ice. The only extensive outwash areas in Clinton County are along Todd Fork and its tributaries. Outwash of both Illinoian and Wisconsinan age occurs along the East Fork of Todd Fork, and outwash of Wisconsinan age occurs only along the other tributaries of Todd Fork *(10, 11, 15, 22, 27)*. See figure 3.

Most of the soils in the county were eventually covered by windblown material, called loess. The loess had the effect of filling in low areas, resulting in broad, nearly level landscapes with the majority of the soils being somewhat poorly drained or poorly drained. The soils east of the Reesville Moraine generally have thinner loess deposits than those in the rest of the county *(16, 27, 30)*.

Bedrock Geology

Clinton County is covered by variable thicknesses of glacial drift. With the exception of a few areas, bedrock is at a depth of more than 80 inches. The exceptions are areas along Anderson Fork in the north and on the steep and very steep side slopes in the south.

Bedrock in Clinton County consists of Silurian limestone and interbedded limestone and calcareous shale of Ordovician age.

The Ordovician bedrock is along the western edge of the county, south to near Clarksville, then southeast towards New Vienna. The bedrock is characterized by thin, alternate layers of limestone and soft, calcareous, bedded shale of the Richmond Formation. See figure 4.

The northeastern two-thirds of the county is underlain by dolomite limestone of the Niagara group of Silurian age. A narrow, irregular strip from the northwestern to southeastern part of the county is underlain by the highly crystalline Brassfield limestone, also of Silurian age. This limestone lies between the Richmond and Niagara groups *(24, 25, 30)*.

The Silurian limestone is currently being quarried and used for construction material and road beds.

Industry and Transportation

Clinton County has numerous small businesses that support the agricultural community, which provides the major industry in the county. There are also expanding transportation hubs for both trucking and air freight and their supporting industries. The transportation industry is the major non-agricultural employer in the county.

The county is served by several, well-aligned State and Federal roads and one interstate highway (I-71) in the northwestern portion of the county. In addition, there is one railroad that transects the county from northeast to southwest and one east-west railroad in the south. Both railroads provide freight service. The expanding air freight and trucking industries provide over-night and 2-day service for many parts of the country.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Wilmington, Ohio, in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 29.1 degrees F and the average daily minimum temperature is 20.4 degrees. The lowest temperature on record, which occurred on January 22, 1984, is -25 degrees. In summer, the average temperature is 71.1 degrees and the average daily maximum temperature is 82.7 degrees. The highest recorded temperature, which occurred on July 14, 1936, is 109 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average

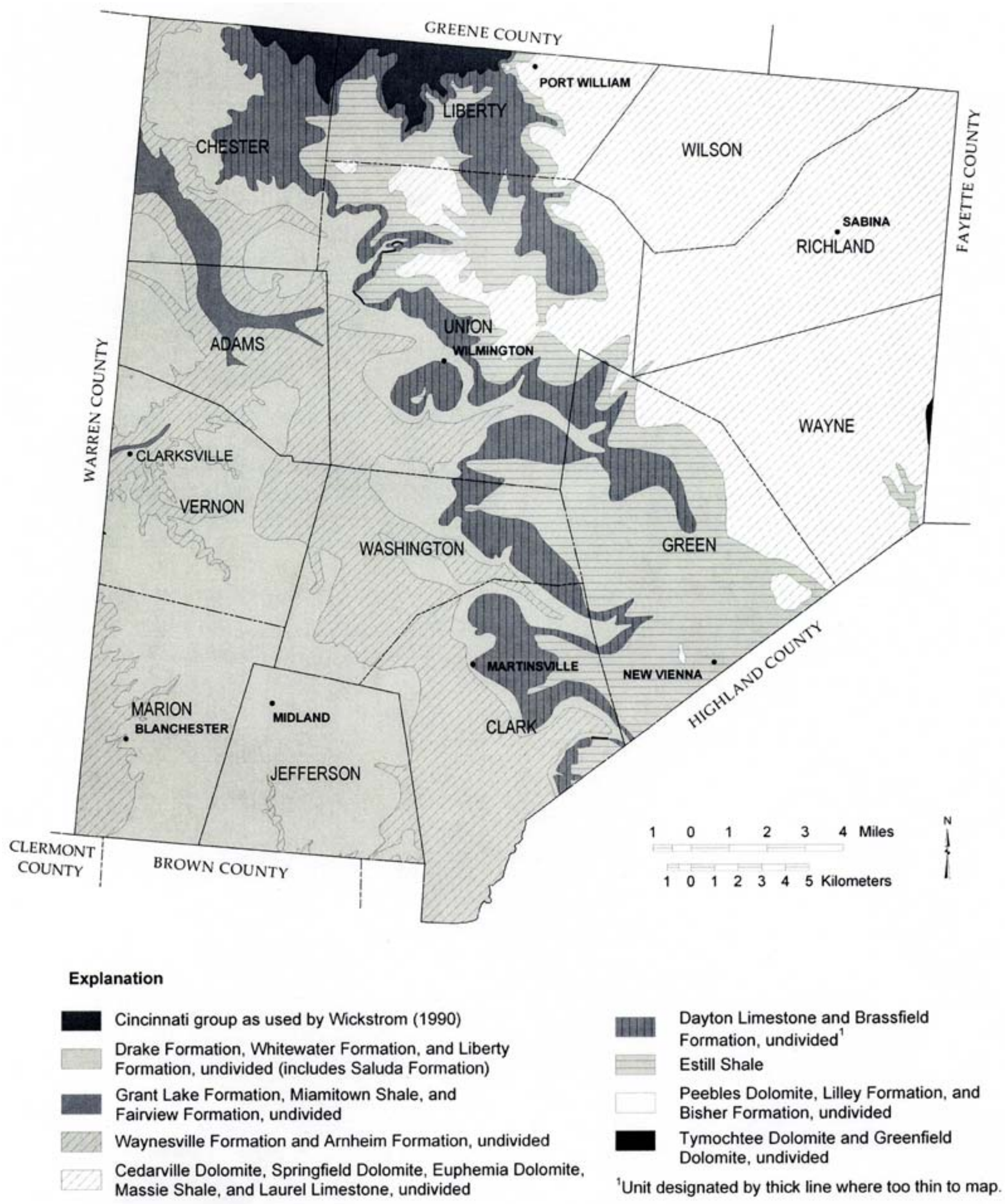

Figure 4.—Bedrock Geology Map of Clinton County *(24)*. Scale is 1:500,000.

temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 41.85 inches. Of this, 23.30 inches, or about 56 percent, usually falls in April through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 5.35 inches, recorded on July 21, 1954. Thunderstorms occur on about 40 days each year, and most occur in June and July.

The average seasonal snowfall is 28.0 inches. The greatest snow depth at any one time during the period of record was 23 inches. On the average, 33 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly

from year to year. The heaviest 1-day snowfall on record was 14.0 inches, recorded on November 26, 1950.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 67 percent of the time possible in summer and 41 percent in winter. The prevailing wind is from the south-southwest. Average windspeed is highest, 11.9 miles per hour, in March.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils

in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Survey Procedures

This survey represents an update of the Clinton County Soil Survey published in 1962 *(30)*. In 1990, at the request of the Clinton County Commissioners, an evaluation of the 1962 survey was undertaken. Several areas were identified for modernization, which included updating and expanding the interpretive tables, recorrelating the survey, updating soil classification, and remapping the county.

The evaluation verified the accuracy of the majority of the line work. These lines were used as a basis in producing the new maps. Transects were made to determine the validity of the map unit composition before these lines were tranferred to the new photo base. In most cases no adjustments or only minor adjustments to soil lines were required.

The general procedures followed in making this survey are described in the “National Soil Survey Handbook” *(32)* and the “Soil Survey Manual” *(38)* of the Natural Resources Conservation Service.

Before actual fieldwork began, preliminary boundaries of slopes and landforms were studied from the aerial photographs flown in l988 at a scale of 1:12,000. USGS topographic maps at a scale of l:12,000 were studied to relate land and image features.

Traverses were made on foot to examine the soils. In most areas, soil examinations along the traverses were made 10 to 50 yards apart, depending on the size of the units. Observations of such items as landforms, trees blown down, vegetation, roadbanks, and animal burrows were made continuously without regard to spacing. Soil boundaries were confirmed or adjusted on the basis of soil examinations, observations, and photo interpretation. The soil material was examined with the aid of a hand auger or spade to a depth of about 80 inches or to bedrock if the bedrock was within a depth of 80 inches. The pedons described as typical were observed and studied in pits.

Soil mapping changes were recorded on the field sheets from the 1962 soil survey. The drainageways were mapped in the field and from the old field sheets and USGS topographic maps. Cultural features were recorded from visual observations and topographic maps.

Samples for chemical analysis, physical analysis, and engineering properties were taken from representative sites of several of the soils in the survey area. The chemical and physical analyses were made by the Soil Characterization Laboratory, Ohio State University, Columbus, Ohio. The results of the analyses are stored in a computerized data file at the laboratory. The analyses for engineering properties were made by the Ohio Department of Transportation, Division of Highways, Bureau of Testing, Soils and

Foundation Section, Columbus, Ohio. The laboratory procedures can be obtained by request from these respective laboratories. The results of laboratory analyses can be obtained from the Soil Characterization Laboratory, Ohio State University, Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, Columbus, Ohio; and the Natural Resources Conservation Service, State Office, Columbus, Ohio.

General Soil Map Units

The general soil map shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Some soil boundaries and soil names in this survey area do not fully match those in adjacent survey areas that were published at an earlier date. Differences are the result of changes and refinements in soil series concepts, updated soil taxonomy, slightly different map unit composition in survey areas, and the use of the State Soil Geographic data (STATSGO) map as the base for the general soil map in this publication.

1. Kokomo-Crosby-Celina

Very deep, nearly level and gently sloping, very poorly drained, somewhat poorly drained, and moderately well drained soils that formed in till or in loess over till

Setting

Landform: Wisconsinan till plain (fig. 5)
Slope range: 0 to 6 percent

Composition

Extent of the map unit in the county: 10 percent
Extent of the components in the map unit:
Kokomo soils—50 percent
Crosby soils—25 percent
Celina soils—15 percent
Minor soils—10 percent

Soil Properties and Qualities

Kokomo

Depth class: Very deep
Drainage class: Very poorly drained

Figure 5.—Typical landscape in the Kokomo-Crosby-Celina general soil map unit. Celina soils are in the foreground, and Celina and Miamian soils are in the more sloping areas in the background. The light-colored areas in the center of the photo are Crosby soils, and the dark areas are Kokomo soils.

Parent material: Till
Surface textural class: Silty clay loam or silt loam
Slope range: 0 to 1 percent

Crosby

Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits
Parent material: A thin layer of loess over till
Surface layer texture: Silt loam
Slope range: 0 to 4 percent

Celina

Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Summits and shoulders
Parent material: A thin layer of loess over till
Surface layer texture: Silt loam
Slope range: 0 to 6 percent

Minor Soils

- Miamian soils on summits and shoulders

Use and Management

Major uses: Cropland
Management concerns: Ponding, limited available water capacity, root-restrictive layer, high clay content, wetness, surface compaction, surface crusting, frost action, restricted permeability, potential for ground-water pollution, erosion, and fair tilth

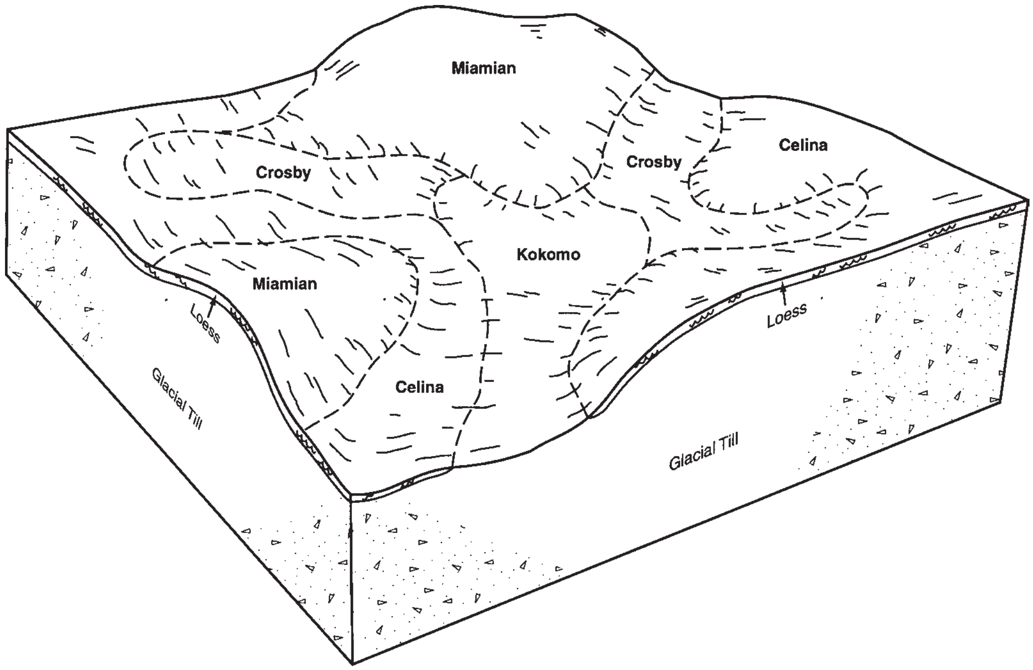

Figure 6.—Typical pattern of soils and parent material in the Celina-Miamian-Crosby general soil map unit.

2. Celina-Miamian-Crosby

Very deep, nearly level to steep, moderately well drained, well drained, and somewhat poorly drained soils that formed in loess over till (fig. 6)

Setting

Landform: Wisconsinan till plain
Slope range: 0 to 35 percent

Composition

Extent of the map unit in the county: 7 percent
Extent of the components in the map unit:
Celina soils—35 percent
Miamian soils—35 percent
Crosby soils—15 percent
Minor soils—15 percent

Soil Properties and Qualities

Celina

Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Summits and shoulders
Parent material: A thin layer of loess over till
Surface layer texture: Silt loam
Slope range: 0 to 6 percent

Miamian

Depth class: Very deep

Drainage class: Well drained
Position on the landform: Summits, shoulders, footslopes, and backslopes
Parent material: A thin layer of loess over till
Surface layer texture: Silt loam or clay loam
Slope range: 2 to 35 percent

Crosby

Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits
Parent material: A thin layer of loess over till
Surface layer texture: Silt loam
Slope range: 0 to 4 percent

Minor Soils

- Kokomo soils on depressions and flats

Use and Management

Major uses: Cropland
Management concerns: Limited available water capacity, root-restrictive layer, high clay content, wetness, surface compaction, surface crusting, frost action, restricted permeability, erosion, and fair tilth

3. Reesville-Treaty

Very deep, nearly level and gently sloping, somewhat poorly drained and poorly drained soils that formed in loess over till

Setting

Landform: Wisconsinan till plain
Slope range: 0 to 4 percent

Composition

Extent of the map unit in the county: 10 percent
Extent of the components in the map unit:
Reesville soils—40 percent
Treaty soils—35 percent
Minor soils—25 percent

Soil Properties and Qualities

Reesville

Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits and shoulders
Parent material: Loess over till
Surface layer texture: Silt loam
Slope range: 0 to 4 percent

Treaty

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Loess over till

Surface layer texture: Silt loam or silty clay loam
Slope range: 0 to 1 percent

Minor Soils

- Birkbeck soils on summits
- Celina soils on summits and shoulders
- Fincastle soils on summits
- Miamian soils on summits and shoulders
- Xenia soils on summits and shoulders

Use and Management

Major uses: Cropland
Management concerns: Ponding, wetness, surface compaction, surface crusting, frost action, potential for ground-water pollution, erosion, and fair tilth

4. Fincastle-Treaty-Xenia

Very deep, nearly level and gently sloping, somewhat poorly drained, poorly drained, and moderately well drained soils that formed in loess over till

Setting

Landform: Wisconsinan till plain
Slope range: 0 to 6 percent

Composition

Extent of the map unit in the county: 16 percent
Extent of the components in the map unit:
Fincastle soils—45 percent
Treaty soils—25 percent
Xenia soils—15 percent
Minor soils—15 percent

Soil Properties and Qualities

Fincastle

Depth class: Very deep
Drainage class: Somewhat poorly drained
Position on the landform: Summits
Parent material: Loess over till
Surface layer texture: Silt loam
Slope range: 0 to 4 percent

Treaty

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Loess over till
Surface layer texture: Silt loam or silty clay loam
Slope range: 0 to 1 percent

Xenia

Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Summits and shoulders

Parent material: Loess over till
Surface layer texture: Silt loam
Slope range: 0 to 6 percent

Minor Soils

- Miamian soils on summits, footslopes, backslopes, and shoulders
- Russell soils on summits and shoulders
- Sloan soils on flood plains

Use and Management

Major uses: Cropland
Management concerns: Ponding, wetness, surface compaction, surface crusting, frost action, potential for ground-water pollution, erosion, limited available water capacity, root-restrictive layer, and fair tilth

5. Xenia-Miamian-Russell

Very deep, nearly level to steep, moderately well drained and well drained soils that formed in loess over till

Setting

Landform: Wisconsinan till plain
Slope range: 0 to 35 percent

Composition

Extent of the map unit in the county: 30 percent
Extent of the components in the map unit:
Xenia soils—35 percent
Miamian soils—25 percent
Russell soils—15 percent
Minor soils—25 percent

Soil Properties and Qualities

Xenia

Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Summits and shoulders
Parent material: Loess over till
Surface layer texture: Silt loam
Slope range: 0 to 6 percent

Miamian

Depth class: Very deep
Drainage class: Well drained
Position on the landform: Summits, shoulders, footslopes, and backslopes
Parent material: A thin layer of loess over till
Surface layer texture: Silt loam or clay loam
Slope range: 2 to 35 percent

Russell

Depth class: Very deep
Drainage class: Well drained

Position on the landform: Summits and shoulders
Parent material: Loess over till
Surface layer texture: Silt loam
Slope range: 2 to 6 percent

Minor Soils

- Crouse soils on backslopes, footslopes, and shoulders
- Dunham soils on treads
- Treaty soils on depressions
- Fincastle soils on summits and shoulders

Use and Management

Major uses: Cropland
Management concerns: Erosion, high clay content, surface compaction, surface crusting, limited available water capacity, frost action, root-restrictive layer, and fair tilth

6. Dunham-Treaty

Very deep, nearly level, poorly drained soils that formed in loess over outwash or in loess over till

Setting

Landform: Stream terraces and Wisconsinan till plain
Slope range: 0 to 2 percent

Composition

Extent of the map unit in the county: 2 percent
Extent of the components in the map unit:
Dunham soils—55 percent
Treaty soils—30 percent
Minor soils—15 percent

Soil Properties and Qualities

Dunham

Depth class: Very deep
Drainage class: Poorly drained
Position on the landform: Treads
Parent material: Loess over outwash over gravelly deposits
Surface layer texture: Silt loam or silty clay loam
Slope range: 0 to 2 percent

Treaty

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Loess over till
Surface layer texture: Silt loam or silty clay loam
Slope range: 0 to 1 percent

Minor Soils

- Birkbeck soils on summits
- Reesville soils on summits
- Sloan soils on flood plains

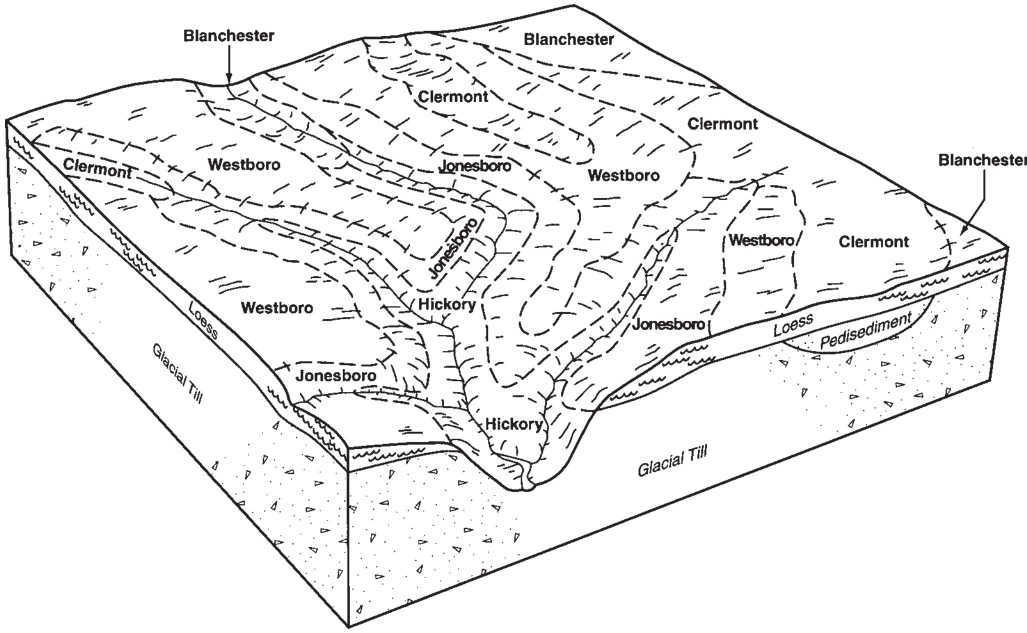

Figure 7.—Typical pattern of soils and parent material in the Westboro-Clermont-Jonesboro general soil map unit.

Use and Management

Major uses: Cropland
Management concerns: Ponding, wetness, potential for ground-water pollution, surface compaction, and frost action

7. Westboro-Clermont-Jonesboro

Very deep, nearly level and gently sloping, somewhat poorly drained, poorly drained, and moderately well drained soils that formed in loess over till or in loess over pedisediment over till (fig. 7)

Setting

Landform: Illinoian till plain
Slope range: 0 to 6 percent

Composition

Extent of the map unit in the county: 15 percent
Extent of the components in the map unit:
Westboro soils—35 percent
Clermont soils—25 percent
Jonesboro soils—10 percent
Minor soils—30 percent

Soil Properties and Qualities

Westboro

Depth class: Very deep
Drainage class: Somewhat poorly drained

Position on the landform: Summits
Parent material: Loess over till
Surface layer texture: Silt loam
Slope range: 0 to 4 percent

Clermont

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Loess over pedisediment over till
Surface layer texture: Silt loam
Slope range: 0 to 1 percent

Jonesboro

Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Summits, shoulders, and footslopes
Parent material: Loess over till
Surface layer texture: Silt loam
Slope range: 0 to 6 percent

Minor Soils

- Hickory soils on backslopes and footslopes
- Blanchester soils in depressions

Use and Management

Major uses: Cropland
Management concerns: Erosion, wetness, ponding, surface compaction, potential for ground-water pollution, frost action, high clay content, restricted permeability, surface crusting, and fair tilth

8. Secondcreek

Very deep, nearly level, very poorly drained soils that formed in lacustrine sediments over till

Setting

Landform: Glacial lakes (relict) on the Illinoian till plain
Slope range: 0 to 1 percent

Composition

Extent of the map unit in the county: Less than 1 percent
Extent of the components in the map unit:
Secondcreek soils—90 percent
Minor soils—10 percent

Soil Properties and Qualities

Secondcreek

Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Lacustrine sediments over till
Surface layer texture: Silt loam or silty clay loam
Slope range: 0 to 1 percent

Minor Soils

- Blanchester soils on summits
- Clermont soils on summits

Use and Management

Major uses: Cropland
Management concerns: Ponding, surface compaction, potential for ground-water pollution, frost action, surface crusting, high clay content, and fair tilth

9. Hickory-Jonesboro-Sligo

Very deep, nearly level to steep, well drained and moderately well drained soils that formed in loess over till or in alluvium

Setting

Landform: Illinoian till plain and flood plains
Slope range: 0 to 35 percent

Composition

Extent of the map unit in the county: 5 percent
Extent of the components in the map unit:
Hickory soils—55 percent
Jonesboro soils—20 percent
Sligo soils—10 percent
Minor soils—15 percent

Soil Properties and Qualities

Hickory

Depth class: Very deep
Drainage class: Well drained
Position on the landform: Footslopes, shoulders, and backslopes
Parent material: A thin layer of loess over till
Surface layer texture: Silt loam
Slope range: 12 to 35 percent

Jonesboro

Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Summits, shoulders, and footslopes
Parent material: Loess over till
Surface layer texture: Silt loam
Slope range: 0 to 6 percent

Sligo

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loamy alluvium
Surface layer texture: Loam or silt loam
Slope range: 0 to 2 percent

Minor Soils

- Dunham soils on treads
- Libre soils on treads and risers

Use and Management

Major uses: Pasture, woodland, and cropland
Management concerns: Erosion, surface compaction, surface crusting, frost action, flooding, low soil strength, slope, high clay content, fair tilth, stickiness, and potential for ground-water pollution

10. Loudon-Hickory-Nicely

Deep or very deep, gently sloping to steep, moderately well drained and well drained soils that formed in loess over till over residuum or in loess over till

Setting

Landform: Illinoian till plain
Slope range: 6 to 35 percent

Composition

Extent of the map unit in the county: 4 percent
Extent of the components in the map unit:
Loudon soils—40 percent
Hickory soils—25 percent
Nicely soils—15 percent
Minor soils—20 percent

Soil Properties and Qualities

Loudon

Depth class: Deep or very deep
Drainage class: Moderately well drained
Position on the landform: Shoulders and footslopes
Parent material: Loess over till over residuum from limestone and shale
Surface layer texture: Silt loam
Slope range: 6 to 12 percent

Hickory

Depth class: Very deep
Drainage class: Well drained
Position on the landform: Footslopes, shoulders, and backslopes
Parent material: A thin layer of loess over till
Surface layer texture: Silt loam
Slope range: 12 to 35 percent

Nicely

Depth class: Very deep
Drainage class: Moderately well drained
Position on the landform: Shoulders and footslopes
Parent material: Loess over till
Surface layer texture: Silt loam
Slope range: 6 to 12 percent

Minor Soils

- Sligo soils on flood plains
- Sloan soils on flood plains

Use and Management

Major uses: Pasture, woodland, and cropland
Management concerns: Erosion, surface compaction, frost action, surface crusting, high clay content, limited available water capacity, low strength, fair tilth, depth to bedrock, stickiness, and slope

11. Stringley-Sligo-Rossburg

Very deep, nearly level, well drained and moderately well drained soils that formed in alluvium

Setting

Landform: Flood plains
Slope range: 0 to 2 percent

Composition

Extent of the map unit in the county: Less than 1 percent
Extent of the components in the map unit:
Stringley and Sligo soils—65 percent
Rossburg soils—25 percent
Minor soils—10 percent

Soil Properties and Qualities

Stringley

Depth class: Very deep
Drainage class: Well drained
Parent material: Calcareous stratified alluvium
Surface layer texture: Loam
Slope range: 0 to 2 percent

Sligo

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loamy alluvium
Surface layer texture: Loam or silt loam
Slope range: 0 to 2 percent

Rossburg

Depth class: Very deep
Drainage class: Well drained
Parent material: Loamy alluvium
Surface layer texture: Silt loam
Slope range: 0 to 2 percent

Minor Soils

- Ross soils on flood plains
- Sloan soils on flood plains

Use and Management

Major uses: Cropland
Management concerns: Flooding, potential for ground-water pollution, surface crusting, and surface compaction

Detailed Soil Map Units

The map units delineated on the detailed soil maps represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

The detailed map unit descriptions list management statements for most major uses of the soils: cropland, pasture, woodland, building sites, septic tank absorption fields, and local roads and streets. The management statements listed for a particular map unit address the most limiting features of that soil for a certain use. Some management statements suggest specific measures that may help alleviate the effects of these limiting soil features. The mention of such management measures is not a recommendation, especially where current laws or programs may prohibit an activity, such as installation of drainage. Even the best management practices cannot overcome some limitations of the soil.

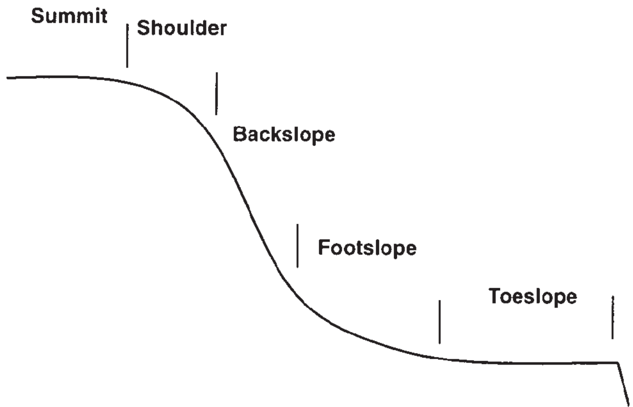

Figure 8.—Diagram showing the relationship between slope position and slope terminology. Adapted from Ruhe, 1975 *(23)*.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Miamian silt loam, 2 to 6 percent, eroded, is a phase of the Miamian series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Jonesboro-Rossmoyne silt loams, 2 to 6 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, gravel, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Figure 8 shows the relationship between different geomorphic slope positions and slope terminology. In areas of low relief in Clinton County, these terms generally were not used. Refer to the Glossary for more detailed definitions of these landform components

BhA—Birkbeck silt loam, 0 to 2 percent slopes

Setting

Landform: Flats on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Birkbeck soil and similar components: 80 percent
Dissimilar components: 20 percent

Contrasting Components

- Reesville soils: 10 percent
- Miamian soils: 5 percent
- Treaty soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 11.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 23 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate in the upper part of the solum and moderately slow in the lower part
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

BhB—Birkbeck silt loam, 2 to 6 percent slopes

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Birkbeck soil and similar components: 75 percent
Dissimilar components: 25 percent

Contrasting Components

- Miamian soils: 10 percent
- Reesville soils: 10 percent
- Treaty soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 11.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 23 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent

Parent material: Loess and the underlying till
Permeability: Moderate in the upper part of the solum and moderately slow in the lower part
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

BmA—Blanchester silty clay loam, 0 to 1 percent slopes

Setting

Landform: Flats and depressions on the Illinoian till plain

Map Unit Composition

Blanchester soil and similar components: 100 percent

Soil Properties and Qualities

Available water capacity: About 10.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 25 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 1.0 foot for long periods
Drainage class: Poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Slow in the upper part of the solum and slow or very slow in the lower part
Potential for frost action: High
Shrink-swell potential: High
Surface layer texture: Silty clay loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. This soil is generally unsuited to building site development.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: Yes

CaD2—Casco silt loam, 12 to 18 percent slopes, eroded

Setting

Landform: Wisconsinan outwash terraces
Position on the landform: Risers

Map Unit Composition

Casco soil and similar components: 85 percent
Dissimilar components: 15 percent

Contrasting Components

- Fox soils: 10 percent
- Ockley soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 3.7 inches to a depth of 23 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 10 to 25 inches to strongly contrasting textural stratification
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Somewhat excessively drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy alluvium underlain by calcareous stratified sandy and loamy outwash
Permeability: Moderate in the loamy mantle and rapid or very rapid in the stratified sandy outwash material
Potential for frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments obstruct the use of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The excessive permeability limits the proper treatment of the effluent from septic systems. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 6e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: B-1
Hydric soil: No

CaE2—Casco silt loam, 18 to 50 percent slopes, eroded

Setting

Landform: Wisconsinan outwash terraces
Position on the landform: Risers and backslopes

Map Unit Composition

Casco soil and similar components: 85 percent
Dissimilar components: 15 percent

Contrasting Components

- Fox soils: 5 percent

- Miamian soils: 5 percent
- Ockley soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 3.3 inches to a depth of 21 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 10 to 23 inches to strongly contrasting textural stratification
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Somewhat excessively drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy alluvium underlain by calcareous stratified sandy and loamy outwash
Permeability: Moderate in the loamy mantle and rapid or very rapid in the stratified sandy outwash material
Potential for frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- The slope may restrict the use of some farm equipment.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and of harvesting and mechanical planting equipment.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Rock fragments obstruct the use of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The excessive permeability limits the proper treatment of the effluent from septic systems. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 7e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: B-2
Hydric soil: No

CbB—Celina silt loam, 2 to 6 percent slopes

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Celina soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Crosby soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 5.4 inches to a depth of 28 inches
Cation-exchange capacity of the surface layer: 9 to 19 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to dense material
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow above the dense till and slow or very slow in the dense till
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by the dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The root systems of plants may be damaged by frost action.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

CbB2—Celina silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders

Map Unit Composition

Celina soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Crosby soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 4.8 inches to a depth of 25 inches
Cation-exchange capacity of the surface layer: 8 to 16 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to dense material
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow above the dense till and slow or very slow in the dense till
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by the dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The root systems of plants may be damaged by frost action.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting

heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

CcA—Celina-Crosby silt loams, 0 to 2 percent slopes

Setting

Landform: Flats on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Celina soil and similar components: 70 percent
Crosby soil and similar components: 15 percent
Dissimilar components: 15 percent

Contrasting Components

- Birkbeck soils: 5 percent
- Kokomo soils: 5 percent
- Losantville soils: 5 percent

Soil Properties and Qualities

Available water capacity: Celina—about 6.8 inches to a depth of 36 inches; Crosby—about 4.9 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: Celina—9 to 19 meq per 100 grams; Crosby—6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to dense material
Depth to the top of the seasonal high water table: Celina—1.5 to 3.0 feet; Crosby—0.5 foot to 1.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Celina—moderately well drained; Crosby—somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Celina—moderately slow above the dense till and slow or very slow in the dense till; Crosby—moderate or moderately slow in the argillic horizon and very slow or slow below the argillic horizon
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.

- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by the dense soil material and the high clay content of the Crosby soil.
- The movement of water into subsurface drains is restricted in areas of the Crosby soil. Drainage guides can be used to determine tile spacing requirements.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the Crosby soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Subsurface drainage helps to lower the seasonal high water table in areas of the Crosby soil.
- In areas of the Crosby soil, including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil that facilitate the movement of water into subsurface drains.

Pastureland

- The root systems of plants may be damaged by frost action.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity of the Crosby soil.
- In areas of the Crosby soil, using a system of conservation tillage when pastures are renovated conserves soil moisture.
- The Crosby soil provides poor summer pasture.
- In areas of the Crosby soil, excess water should be removed or grass or legume species that are adapted to wet soil conditions should be planted.
- In areas of the Crosby soil, restricting grazing during wet periods can minimize compaction.

Woodland

- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment.
- The seasonal high water table in areas of the Crosby soil can inhibit the growth of some species of seedlings by reducing root respiration.
- Soil wetness may limit the use of log trucks in areas of the Crosby soil.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas of the Crosby soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas of the Crosby soil, the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soils.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: Celina—A-6; Crosby—C-2
Hydric soil: No

CeB—Celina-Losantville silt loams, 2 to 6 percent slopes

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders

Map Unit Composition

Celina soil and similar components: 50 percent
Losantville soil and similar components: 30 percent
Dissimilar components: 20 percent

Contrasting Components

- Crosby soils: 10 percent
- Birkbeck soils: 5 percent
- Miamian soils: 5 percent

Soil Properties and Qualities

Available water capacity: Celina—about 5.5 inches to a depth of 28 inches; Losantville—about 2.8 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 9 to 19 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Celina—20 to 40 inches to dense material; Losantville—12 to 20 inches to dense material
Depth to the top of the seasonal high water table: Celina—1.5 to 3.0 feet; Losantville—1.0 to 2.0 feet
Water table (kind): Perched
Ponding: None

Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: Celina—1.0 to 3.0 percent; Losantville—1.0 to 2.0 percent
Parent material: Celina—a thin layer of loess and the underlying till; Losantville—basal till
Permeability: Celina—moderately slow above the dense till and slow or very slow in the dense till; Losantville—moderate or moderately slow in the solum and very slow or slow in the underlying till
Potential for frost action: Celina—high; Losantville—moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Celina—high; Losantville—very high
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soils to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action in areas of the Celina soil.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by the dense soil material and the high clay content of the Losantville soil.
- The movement of water into subsurface drains is restricted in areas of the Losantville soil. Drainage guides can be used to determine tile spacing requirements.
- In areas of the Losantville soil, subsurface drainage helps to lower the seasonal high water table.
- In areas of the Losantville soil, including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil that facilitate the movement of water into subsurface drains.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- These soils provide poor summer pasture.
- In areas of the Celina soil, the root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate

and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment.
- Soil wetness may limit the use of log trucks in areas of the Losantville soil.
- In areas of the Losantville soil, burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the Celina soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas of the Losantville soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, the Celina soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soils.
- Because of the low bearing strength, the Celina soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: Celina—A-6; Losantville—B-1
Hydric soil: No

CeB2—Celina-Losantville silt loams, 2 to 6 percent slopes, eroded

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders

Map Unit Composition

Celina soil and similar components: 60 percent

Losantville soil and similar components: 30 percent
Dissimilar components: 10 percent

Contrasting Components

- Crosby soils: 10 percent

Soil Properties and Qualities

Available water capacity: Celina—about 4.4 inches to a depth of 23 inches; Losantville—about 2.5 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 9 to 19 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Celina—20 to 40 inches to dense material; Losantville—12 to 20 inches to dense material
Depth to the top of the seasonal high water table: Celina—1.5 to 3.0 feet; Losantville—1.0 to 2.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: Celina—1.0 to 3.0 percent; Losantville—1.0 to 2.0 percent
Parent material: Celina—a thin layer of loess and the underlying till; Losantville—basal till
Permeability: Celina—moderately slow above the dense till and slow or very slow in the dense till; Losantville—moderate or moderately slow in the solum and very slow or slow in the underlying till
Potential for frost action: Celina—high; Losantville—moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Celina—high; Losantville—very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soils to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- In areas of the Celina soil, the root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by the dense soil material and the high clay content of the Losantville soil.
- The movement of water into subsurface drains is restricted in areas of the Losantville soil. Drainage guides can be used to determine tile spacing requirements.

- In areas of the Losantville soil, subsurface drainage helps to lower the seasonal high water table.
- In areas of the Losantville soil, including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil that facilitate the movement of water into subsurface drains.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- These soils provide poor summer pasture.
- The root systems of plants may be damaged by frost action in areas of the Celina soil.

Woodland

- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment.
- Soil wetness may limit the use of log trucks in areas of the Losantville soil.
- Burning in areas of the Losantville soil may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- In some areas of the Losantville soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of these soils.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland

Figure 9.—Crawfish castles on Clermont soils.

Pasture and hayland suitability group: Celina—A-6; Losantville—B-1
Hydric soil: No

CmA—Clermont silt loam, 0 to 1 percent slopes

Setting

Landform: Flats and depressions on the Illinoian till plain (fig. 9)

Map Unit Composition

Clermont soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Secondcreek soils: 5 percent
- Jonesboro soils: 3 percent
- Rossmoyne soils: 2 percent

Soil Properties and Qualities

Available water capacity: About 11.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 12 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 1.0 foot for long periods
Drainage class: Poorly drained
Flooding: None

Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying pedisediment and till
Permeability: Very slow
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. This soil is generally unsuited to building site development.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland: Not prime farmland
Pasture and hayland suitability group: C-2
Hydric soil: Yes

CpA—Coblen loam, 0 to 2 percent slopes, rarely flooded

Setting

Landform: Slight rises on flood plains

Map Unit Composition

Coblen soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Ockley soils: 5 percent
- Rossburg soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 9.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 28 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Rare
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Loamy alluvium
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- Under unusual weather conditions, this soil is subject to rare flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent the damage caused by flooding.

Septic tank absorption fields

- This soil is generally unsuited to septic tank absorption fields. Because of the flooding, the absorption and proper treatment of the effluent from septic systems are greatly limited. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

CrB—Corwin silt loam, 2 to 6 percent slopes

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Corwin soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Crosby soils: 5 percent
- Kokomo soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 5.3 inches to a depth of 36 inches
Cation-exchange capacity of the surface layer: 10 to 24 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 24 to 40 inches to dense material
Depth to the top of the seasonal high water table: 1.5 to 2.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow above the dense till and slow or very slow in the dense till
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by the dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building

maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: B-1
Hydric soil: No

CtA—Crosby-Celina silt loams, 0 to 2 percent slopes

Setting

Landform: Flats on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Crosby soil and similar components: 70 percent
Celina soil and similar components: 15 percent
Dissimilar components: 15 percent

Contrasting Components

- Kokomo soils: 5 percent
- Losantville soils: 5 percent
- Reesville soils: 5 percent

Soil Properties and Qualities

Available water capacity: Crosby—about 5.1 inches to a depth of 34 inches; Celina—about 4.7 inches to a depth of 24 inches

Cation-exchange capacity of the surface layer: Crosby—6 to 20 meq per 100 grams; Celina—9 to 19 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to dense material
Depth to the top of the seasonal high water table: Crosby—0.5 foot to 1.5 feet; Celina—1.5 to 3.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Crosby—somewhat poorly drained; Celina—moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Crosby—moderate or moderately slow in the argillic horizon and very slow or slow below the argillic horizon; Celina—moderately slow above the dense till and slow or very slow in the dense till
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soils to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted in areas of the Crosby soil. Drainage guides can be used to determine tile spacing requirements.
- In areas of the Crosby soil, subsurface drainage helps to lower the seasonal high water table.
- In areas of the Crosby soil, including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil that facilitate the movement of water into subsurface drains.
- The rooting depth of crops is restricted by the dense soil material and the high clay content of the Crosby soil.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- These soils provide poor summer pasture.
- In areas of the Crosby soil, excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing in areas of the Crosby soil during wet periods can minimize compaction.

Woodland

- The seasonal high water table in areas of the Crosby soil can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the Crosby soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soils increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the Crosby soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas of the Crosby soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas of the Crosby soil, the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, the Crosby soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of these soils.
- Because of the low bearing strength, the Crosby soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: Crosby—C-2; Celina—A-6
Hydric soil: No

CtB—Crosby-Celina silt loams, 2 to 4 percent slopes

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Crosby soil and similar components: 60 percent
Celina soil and similar components: 30 percent
Dissimilar components: 10 percent

Contrasting Components

- Losantville soils: 5 percent
- Miamian soils: 5 percent

Soil Properties and Qualities

Available water capacity: Crosby—about 5.0 inches to a depth of 35 inches; Celina—about 5.0 inches to a depth of 26 inches
Cation-exchange capacity of the surface layer: Crosby—6 to 20 meq per 100 grams; Celina—9 to 19 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to dense material
Depth to the top of the seasonal high water table: Crosby—0.5 foot to 1.5 feet; Celina—1.5 to 3.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Crosby—somewhat poorly drained; Celina—moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Crosby—moderate or moderately slow in the argillic horizon and very slow or slow below the argillic horizon; Celina—moderately slow above the dense till and slow or very slow in the dense till
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soils to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

- The movement of water into subsurface drains is restricted in areas of the Crosby soil. Drainage guides can be used to determine tile spacing requirements.
- In areas of the Crosby soil, subsurface drainage helps to lower the seasonal high water table.
- In areas of the Crosby soil, including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil that facilitate the movement of water into subsurface drains.
- The rooting depth of crops is restricted by the dense soil material and the high clay content of the Crosby soil.
- In areas of the Celina soil, controlling traffic can minimize soil compaction.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- These soils provide poor summer pasture.
- In areas of the Crosby soil, excess water should be removed or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing in areas of the Crosby soil during wet periods can minimize compaction.

Woodland

- In areas of the Crosby soil, the seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks in areas of the Crosby soil.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas of the Crosby soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas of the Crosby soil, the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.

- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soils.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: Crosby—C-2; Celina—A-6
Hydric soil: No

CuC2—Crouse-Miamian silt loams, 6 to 12 percent slopes, eroded

Setting

Landform: Wisconsinan terminal moraines
Position on the landform: Backslopes, shoulders, and footslopes

Map Unit Composition

Crouse soil and similar components: 60 percent
Miamian soil and similar components: 30 percent
Dissimilar components: 10 percent

Contrasting Components

- Xenia soils: 10 percent

Soil Properties and Qualities

Available water capacity: Crouse—about 10.1 inches to a depth of 60 inches; Miamian—about 6.8 inches to a depth of 40 inches
Cation-exchange capacity of the surface layer: Crouse—12 to 15 meq per 100 grams; Miamian—10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Crouse—more than 80 inches; Miamian—20 to 41 inches to dense material
Depth to the top of the seasonal high water table: Crouse—3.5 to 4.0 feet; Miamian—2.5 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: Crouse—0.5 to 2.0 percent; Miamian—1.0 to 3.0 percent

Parent material: A thin layer of loess and the underlying till
Permeability: Crouse—moderate; Miamian—moderately slow in the solum and slow or very slow in the dense till
Potential for frost action: Crouse—high; Miamian—moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Crouse—medium; Miamian—high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- In areas of the Crouse soil, the root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- In areas of the Miamian soil, the rooting depth of crops may be restricted by the high clay content.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- In areas of the Crouse soil, the root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- In areas of the Crouse soil, a loss of soil productivity may occur following an episode of fire.

Building sites

- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.
- The slope influences the use of machinery and the amount of excavation required.

Special building practices and designs may be required to ensure satisfactory performance.
- In some areas of the Miamian soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas of the Miamian soil, the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines and the seepage of poorly treated effluent is a concern.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: Crouse—A-6; Miamian—A-1
Hydric soil: No

CuD2—Crouse-Miamian silt loams, 12 to 18 percent slopes, eroded

Setting

Landform: Wisconsinan terminal moraines
Position on the landform: Footslopes

Map Unit Composition

Crouse soil and similar components: 60 percent
Miamian soil and similar components: 30 percent
Dissimilar components: 10 percent

Contrasting Components

- Losantville soils: 10 percent

Soil Properties and Qualities

Available water capacity: Crouse—about 11.6 inches to a depth of 60 inches; Miamian—about 5.9 inches to a depth of 36 inches

Cation-exchange capacity of the surface layer: Crouse—12 to 15 meq per 100 grams; Miamian—10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Crouse—more than 80 inches; Miamian—20 to 40 inches to dense material
Depth to the top of the seasonal high water table: Crouse—3.5 to 4.0 feet; Miamian—2.5 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: Crouse—0.5 to 2.0 percent; Miamian—1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Crouse—moderate; Miamian—moderately slow in the solum and slow or very slow in the dense till
Potential for frost action: Crouse—high; Miamian—moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Crouse—medium; Miamian—high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action in areas of the Crouse soil.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- In areas of the Miamian soil, incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- In areas of the Miamian soils, the rooting depth of crops is restricted by the dense soil material and the high clay content.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.
- In areas of the Miamian soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- In areas of the Miamian soil, using a system of conservation tillage when pastures are renovated conserves soil moisture.
- The Miamian soil provides poor summer pasture.

Woodland

- If the soils are disturbed, the slope increases the hazard of erosion.

- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- A loss of soil productivity may occur following an episode of fire in areas of the Crouse soil.
- The stickiness of the Miamian soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.
- In some areas of the Miamian soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas of the Miamian soil, the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult in areas of the Crouse soil.

- Because of the low bearing strength, the Miamian soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 4e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: Crouse—A-6; Miamian—A-1
Hydric soil: No

DhA—Dunham silt loam, 0 to 2 percent slopes, overwash

Setting

Landform: Wisconsinan stream terraces
Position on the landform: Treads

Map Unit Composition

Dunham soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Sloan soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 22 to 29 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 foot
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 0.5 foot for long periods
Drainage class: Poorly drained
Flooding: None
Organic matter content in the surface layer: 5.0 to 6.0 percent
Parent material: Loess and the underlying loamy outwash over gravelly deposits
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

- Controlling traffic can minimize soil compaction.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. This soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: Yes

DuA—Dunham silty clay loam, 0 to 2 percent slopes

Setting

Landform: Wisconsinan stream terraces
Position on the landform: Treads

Map Unit Composition

Dunham soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Sloan soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 25 to 34 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 foot
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 0.5 foot for long periods
Drainage class: Poorly drained
Flooding: None
Organic matter content in the surface layer: 5.0 to 6.0 percent
Parent material: Loess and the underlying loamy outwash over gravelly deposits
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. This soil is generally unsuited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: Yes

EgB—Eldean silt loam, 2 to 6 percent slopes

Setting

Landform: Wisconsinan outwash terraces
Position on the landform: Treads

Map Unit Composition

Eldean soil and similar components: 95 percent
Dissimilar components: 5 percent

Contrasting Components

- Ockley soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 4.4 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Outwash
Permeability: Moderate or moderately slow in the solum and rapid or very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- This soil is well suited to use as building sites.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: B-1
Hydric soil: No

EkC2—Eldean gravelly loam, 6 to 12 percent slopes, eroded

Setting

Landform: Wisconsinan outwash terraces
Position on the landform: Risers

Map Unit Composition

Eldean soil and similar components: 95 percent
Dissimilar components: 5 percent

Contrasting Components

- Casco soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 2.6 inches to a depth of 22 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Outwash
Permeability: Moderate or moderately slow in the solum and rapid or very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Gravelly loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- The rooting depth of crops may be restricted by the high clay content.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments obstruct the use of mechanical planting equipment.
- Burning may destroy organic matter.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Special building practices and designs may be required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The excessive permeability limits the proper treatment of the effluent from septic systems. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: B-1
Hydric soil: No

FgA—Fincastle silt loam, 0 to 2 percent slopes

Setting

Landform: Flats on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Fincastle soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Crosby soils: 5 percent
- Treaty soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 9.6 inches to a depth of 50 inches
Cation-exchange capacity of the surface layer: 6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the top of the seasonal high water table: 1.0 to 1.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate or moderately slow in the solum and slow or very slow in the underlying dense till
Potential for frost action: High
Shrink-swell potential: Moderate

Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight
Distinctive soil property: 22 to 40 inches of loess over till material

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting

heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: No

FgB—Fincastle silt loam, 2 to 4 percent slopes

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Fincastle soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Crosby soils: 5 percent
- Treaty soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 7.9 inches to a depth of 41 inches
Cation-exchange capacity of the surface layer: 6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the top of the seasonal high water table: 1.0 to 1.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate or moderately slow in the solum and slow or very slow in the underlying dense till
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight
Distinctive soil property: 22 to 40 inches of loess over till material

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.

- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Erosion control is needed when pastures are renovated.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: No

FnA—Fox silt loam, 0 to 2 percent slopes

Setting

Landform: Wisconsinan outwash terraces
Position on the landform: Treads

Map Unit Composition

Fox soil and similar components: 100 percent

Soil Properties and Qualities

Available water capacity: About 5.4 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 24 to 40 inches to strongly contrasting textural stratification
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and loamy alluvium underlain by stratified calcareous sandy outwash
Permeability: Moderate in the solum and rapid or very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate

and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- This soil is well suited to use as building sites.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2s
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

FnB—Fox silt loam, 2 to 6 percent slopes

Setting

Landform: Wisconsinan outwash terraces
Position on the landform: Treads

Map Unit Composition

Fox soil and similar components: 100 percent

Soil Properties and Qualities

Available water capacity: About 5.7 inches to a depth of 35 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 24 to 40 inches to strongly contrasting textural stratification
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and loamy alluvium underlain by stratified calcareous sandy outwash
Permeability: Moderate in the solum and rapid or very rapid in the substratum

Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

FnC2—Fox silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Wisconsinan outwash terraces
Position on the landform: Risers

Map Unit Composition

Fox soil and similar components: 100 percent

Soil Properties and Qualities

Available water capacity: About 4.9 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 2 to 18 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 24 to 40 inches to strongly contrasting textural stratification
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: A thin layer of loess and loamy alluvium underlain by stratified calcareous sandy outwash
Permeability: Moderate in the solum and rapid or very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.

- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland

Pasture and hayland suitability group: A-1
Hydric soil: No

HkD2—Hickory silt loam, 12 to 18 percent slopes, eroded

Setting

Landform: Illinoian till plains
Position on the landform: Footslopes and shoulders

Map Unit Composition

Hickory soil and similar components: 85 percent
Dissimilar components: 15 percent

Contrasting Components

- Loudon soils: 10 percent
- Morrisville soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderate
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.

- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- Burning may destroy organic matter.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- The seasonal high water table limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

HkE2—Hickory silt loam, 18 to 25 percent slopes, eroded

Setting

Landform: Illinoian till plains
Position on the landform: Backslopes

Map Unit Composition

Hickory soil and similar components: 85 percent
Dissimilar components: 15 percent

Contrasting Components

- Loudon soils: 10 percent
- Morrisville soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 10.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderate
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and of harvesting and mechanical planting equipment.
- Because of the low soil strength, harvesting equipment may be difficult to operate

and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- Burning may destroy organic matter.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- The seasonal high water table limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 6e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-2
Hydric soil: No

HkF2—Hickory silt loam, 25 to 35 percent slopes, eroded

Setting

Landform: Illinoian till plains
Position on the landform: Backslopes

Map Unit Composition

Hickory soil and similar components: 85 percent
Dissimilar components: 15 percent

Contrasting Components

- Loudon soils: 10 percent
- Morrisville soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 9.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderate
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- The slope may restrict the use of some farm equipment.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and of harvesting and mechanical planting equipment.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- Burning may destroy organic matter.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soil may crack foundations and basement

walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- The seasonal high water table limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 7e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-3
Hydric soil: No

HnE2—Hickory-Morrisville silt loams, 18 to 25 percent slopes, eroded

Setting

Landform: Illinoian till plains
Position on the landform: Backslopes

Map Unit Composition

Hickory soil and similar components: 60 percent
Morrisville soil and similar components: 30 percent
Dissimilar soils: 10 percent

Contrasting Components

- Loudon soils: 10 percent

Soil Properties and Qualities

Available water capacity: Hickory—about 9.3 inches to a depth of 60 inches; Morrisville—about 4.4 inches to a depth of 47 inches
Cation-exchange capacity of the surface layer: Hickory—11 to 20 meq per 100 grams; Morrisville—8 to 22 meq per 100 grams
Depth class: Hickory—very deep; Morrisville—deep

Depth to root-restrictive feature: Hickory—more than 80 inches; Morrisville—40 to 60 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: Hickory—4.0 to 6.0 feet; Morrisville—2.5 to 3.5 feet
Water table (kind): Hickory—apparent; Morrisville—perched
Ponding: None
Drainage class: Hickory—well drained; Morrisville—moderately well drained
Flooding: None
Organic matter content in the surface layer: Hickory—1.0 to 2.0 percent; Morrisville—1.0 to 3.0 percent
Parent material: Hickory—a thin layer of loess and the underlying till; Morrisville—till and the underlying residuum weathered from limestone and shale
Permeability: Hickory—moderate; Morrisville—moderately slow or slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Hickory—high; Morrisville—very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- In areas of the Morrisville soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- In areas of the Morrisville soil, using a system of conservation tillage when pastures are renovated conserves soil moisture.
- The Morrisville soil provides poor summer pasture.

Woodland

- If the soils are disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and of harvesting and mechanical planting equipment.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- Burning may destroy organic matter.
- Bedrock may interfere with the construction of haul roads and log landing sites in areas of the Morrisville soil.
- Because of the content of clay, the Morrisville soil becomes sticky when wet. The stickiness increases the cost of constructing haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.

Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.
- In areas of the Morrisville soil, the depth to bedrock and hardness of bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- The seasonal high water table in areas of the Hickory soil limits the absorption and proper treatment of the effluent from septic systems.
- In areas of the Morrisville soil, the limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- Because of the seasonal high water table in areas of the Morrisville soil, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 6e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: Hickory—A-2; Morrisville—B-1
Hydric soil: No

JrA—Jonesboro-Rossmoyne silt loams, 0 to 2 percent slopes

Setting

Landform: Flats on the Illinoian till plain
Position on the landform: Summits

Map Unit Composition

Jonesboro soil and similar components: 65 percent
Rossmoyne soil and similar components: 20 percent
Dissimilar components: 15 percent

Contrasting Components

- Clermont soils: 5 percent
- Schaffer soils: 5 percent
- Westboro soils: 5 percent

Soil Properties and Qualities

Available water capacity: Jonesboro—about 10.4 inches to a depth of 60 inches; Rossmoyne—about 4.9 inches to a depth of 26 inches
Cation-exchange capacity of the surface layer: Jonesboro—12 to 16 meq per 100 grams; Rossmoyne—9 to 22 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Jonesboro—more than 80 inches; Rossmoyne—18 to 30 inches to a fragipan
Depth to the top of the seasonal high water table: 1.5 to 2.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: Jonesboro—1.0 to 2.0 percent; Rossmoyne—1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Jonesboro—moderate in the upper part of the solum and slow in the lower part; Rossmoyne—moderate above the fragipan and slow or moderately slow in the fragipan
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Jonesboro—high; Rossmoyne—low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- In areas of the Rossmoyne soil, incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- In areas of the Rossmoyne soil, the rooting depth of crops is restricted by the dense soil material.

Pastureland

- The root systems of plants may be damaged by frost action.
- In areas of the Rossmoyne soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.

- In areas of the Rossmoyne soil, using a system of conservation tillage when pastures are renovated conserves soil moisture.
- The Rossmoyne soil provides poor summer pasture.

Woodland

- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- In areas of the Joneboro soil, burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas of the Jonesboro soil, the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of these soils.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: Jonesboro—A-6; Rossmoyne—F-3
Hydric soil: No

JrB—Jonesboro-Rossmoyne silt loams, 2 to 6 percent slopes

Setting

Landform: Slight rises on the Illinoian till plain
Position on the landform: Summits

Map Unit Composition

Jonesboro soil and similar components: 70 percent
Rossmoyne soil and similar components: 20 percent
Dissimilar components: 10 percent

Contrasting Components

- Nicely soils: 5 percent
- Westboro soils: 5 percent

Soil Properties and Qualities

Available water capacity: Jonesboro—about 10.5 inches to a depth of 60 inches; Rossmoyne—about 4.7 inches to a depth of 25 inches
Cation-exchange capacity of the surface layer: Jonesboro—12 to 16 meq per 100 grams; Rossmoyne—9 to 22 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Jonesboro—more than 80 inches; Rossmoyne—18 to 30 inches to a fragipan
Depth to the top of the seasonal high water table: 1.5 to 2.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: Jonesboro—1.0 to 2.0 percent; Rossmoyne—1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Jonesboro—moderate in the upper part of the solum and slow in the lower part; Rossmoyne—moderate above the fragipan and slow or moderately slow in the fragipan
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Jonesboro—medium; Rossmoyne—low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

- In areas of the Rossmoyne soil, incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- In areas of the Rossmoyne soil, the rooting depth of crops is restricted by the dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.
- In areas of the Rossmoyne soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- In areas of the Rossmoyne soil, using a system of conservation tillage when pastures are renovated conserves soil moisture.
- The Rossmoyne soil provides poor summer pasture.

Woodland

- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- In areas of the Jonesboro soil, a loss of soil productivity may occur following an episode of fire.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas of the Jonesboro soil, the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soils.
- Because of the low bearing strength, these soils are generally unfavorable for

supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: Jonesboro—A-6; Rossmoyne—F-3
Hydric soil: No

JrC2—Jonesboro-Rossmoyne silt loams, 6 to 12 percent slopes, eroded

Setting

Landform: Illinoian till plains
Position on the landform: Footslopes and shoulders

Map Unit Composition

Jonesboro soil and similar components: 65 percent
Rossmoyne soil and similar components: 20 percent
Dissimilar components: 15 percent

Contrasting Components

- Hickory soils: 5 percent
- Loudon soils: 5 percent
- Nicely soils: 5 percent

Soil Properties and Qualities

Available water capacity: Jonesboro—about 10.3 inches to a depth of 60 inches; Rossmoyne—about 3.9 inches to a depth of 22 inches
Cation-exchange capacity of the surface layer: Jonesboro—10 to 14 meq per 100 grams; Rossmoyne—8 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Jonesboro—more than 80 inches; Rossmoyne—18 to 30 inches to a fragipan
Depth to the top of the seasonal high water table: 1.5 to 2.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: Jonesboro—0.8 to 1.8 percent; Rossmoyne—0.8 to 2.8 percent
Parent material: Loess and the underlying till
Permeability: Jonesboro—moderate in the upper part of the solum and slow in the lower part; Rossmoyne—moderate above the fragipan and slow or moderately slow in the fragipan
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Jonesboro—very high; Rossmoyne—medium
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- In areas of the Jonesboros soil, the rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- In areas of the Rossmoyne soil, incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- In areas of the Rossmoyne soil, the rooting depth of crops is restricted by the dense soil material.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.
- In areas of the Rossmoyne soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- In areas of the Rossmoyne soil, using a system of conservation tillage when pastures are renovated conserves soil moisture.
- The Rossmoyne soil provides poor summer pasture.

Woodland

- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength of the Jonesboro soil, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required.

Special building practices and designs may be required to ensure satisfactory performance.
- In some areas of the Jonesboro soil, the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines and the seepage of poorly treated effluent is a concern.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of these soils.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: Jonesboro—A-6; Rossmoyne—F-3
Hydric soil: No

KnA—Kokomo silt loam, 0 to 1 percent slopes

Setting

Landform: Flats and depressions on the Wisconsinan till plain

Map Unit Composition

Kokomo soil and similar components: 95 percent
Dissimilar components: 5 percent

Contrasting Components

- Crosby soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 10.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 29 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 1.0 foot for very long periods

Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Till
Permeability: Moderately slow in the solum and very slow or slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- A combination of surface and subsurface drainage helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil that facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. This soil is generally unsuited to building site development.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: Yes

KoA—Kokomo silty clay loam, 0 to 1 percent slopes

Setting

Landform: Flats and depressions on the Wisconsinan till plain

Map Unit Composition

Kokomo soil and similar components: 95 percent
Dissimilar components: 5 percent

Contrasting Components

- Crosby soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 9.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 16 to 33 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 1.0 foot for very long periods
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Till
Permeability: Moderately slow in the solum and very slow or slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil that facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. This soil is generally unsuited to building site development.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: Yes

LbA—Libre silt loam, 0 to 2 percent slopes

Setting

Landform: Illinoian outwash terraces
Position on the landform: Treads

Map Unit Composition

Libre soil and similar components: 95 percent
Dissimilar components: 5 percent

Contrasting Components

- Sardinia soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 7.3 inches to a depth of 34 inches
Cation-exchange capacity of the surface layer: 8 to 12 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 28 to 60 inches to dense material
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess and the underlying outwash
Permeability: Moderate in the upper part of the solum and moderately slow in the lower part
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- Burning may destroy organic matter.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

LbB—Libre silt loam, 2 to 6 percent slopes

Setting

Landform: Illinoian outwash terraces
Position on the landform: Treads

Map Unit Composition

Libre soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Sardinia soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 7.1 inches to a depth of 33 inches
Cation-exchange capacity of the surface layer: 8 to 12 meq per 100 grams

Depth class: Very deep
Depth to root-restrictive feature: 28 to 60 inches to dense material
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess and the underlying outwash
Permeability: Moderate in the upper part of the solum and moderately slow in the lower part
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the

effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

LbC2—Libre silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Illinoian outwash terraces
Position on the landform: Risers

Map Unit Composition

Libre soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Hickory soils: 5 percent
- Nicely soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 6.4 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 6 to 10 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 28 to 60 inches to dense material
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.3 to 1.5 percent
Parent material: Loess and the underlying outwash
Permeability: Moderate in the upper part of the solum and moderately slow in the lower part
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Burning may destroy organic matter.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines and the seepage of poorly treated effluent is a concern.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

LoC2—Loudon silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Illinoian till plains
Position on the landform: Footslopes and shoulders

Map Unit Composition

Loudon soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Morrisville soils: 5 percent
- Nicely soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 9.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 20 meq per 100 grams
Depth class: Deep or very deep
Depth to root-restrictive feature: 40 to 70 inches to bedrock (paralithic)
Depth to the top of the seasonal high water table: 1.5 to 2.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying till and residuum weathered from limestone and shale
Permeability: Slow
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines and the seepage of poorly treated effluent is a concern.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

LuA—Lumberton silt loam, 0 to 2 percent slopes

Setting

Landform: Wisconsinan stream terraces
Position on the landform: Treads

Map Unit Composition

Lumberton soil and similar components: 100 percent

Soil Properties and Qualities

Available water capacity: About 8.2 inches to a depth of 54 inches
Cation-exchange capacity of the surface layer: 8 to 14 meq per 100 grams
Depth class: Moderately deep or deep
Depth to root-restrictive feature: 33 to 60 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and loamy outwash over limestone residuum
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The depth to bedrock and hardness of bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.

Septic tank absorption fields

- The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

LuB—Lumberton silt loam, 2 to 6 percent slopes

Setting

Landform: Wisconsinan stream terraces
Position on the landform: Treads

Map Unit Composition

Lumberton soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Miamian soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 6.7 inches to a depth of 45 inches
Cation-exchange capacity of the surface layer: 8 to 14 meq per 100 grams

Depth class: Moderately deep or deep
Depth to root-restrictive feature: 33 to 60 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and loamy outwash over limestone residuum
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The depth to bedrock and hardness of bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.

Septic tank absorption fields

- The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

LuC2—Lumberton silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Wisconsinan stream terraces
Position on the landform: Risers

Map Unit Composition

Lumberton soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Miamian soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 5.7 inches to a depth of 41 inches
Cation-exchange capacity of the surface layer: 6 to 12 meq per 100 grams
Depth class: Moderately deep or deep
Depth to root-restrictive feature: 33 to 60 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess and loamy outwash over limestone residuum
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The depth to bedrock and hardness of bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines and the seepage of poorly treated effluent is a concern.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

LuD2—Lumberton silt loam, 12 to 18 percent slopes, eroded

Setting

Landform: Wisconsinan stream terraces and valley sides
Position on the landform: Risers

Map Unit Composition

Lumberton soil and similar components: 85 percent
Dissimilar components: 15 percent

Contrasting Components

- Miamian soils: 10 percent
- Thrifton soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 8.3 inches to a depth of 54 inches
Cation-exchange capacity of the surface layer: 6 to 12 meq per 100 grams
Depth class: Moderately deep or deep
Depth to root-restrictive feature: 33 to 60 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess and loamy outwash over limestone residuum
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- Burning may destroy organic matter.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The depth to bedrock and hardness of bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.

Septic tank absorption fields

- The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 4e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

LuF2—Lumberton silt loam, 25 to 50 percent slopes, eroded

Setting

Landform: Wisconsinan valley sides
Position on the landform: Risers and backslopes

Map Unit Composition

Lumberton soil and similar components: 80 percent
Dissimilar components: 20 percent

Contrasting Components

- Miamian soils: 10 percent
- Thrifton soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 5.6 inches to a depth of 34 inches
Cation-exchange capacity of the surface layer: 6 to 12 meq per 100 grams
Depth class: Moderately deep or deep
Depth to root-restrictive feature: 33 to 60 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loess and loamy outwash over limestone residuum
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and of harvesting and mechanical planting equipment.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- Because of the slope, the use of equipment to prepare sites for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building sites

- The depth to bedrock and hardness of bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- Because of the limited depth to bedrock, this soil is generally unsuitable as sites for septic tank absorption fields.
- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.

Local roads and streets

- The depth to bedrock and hardness of bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 7e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: F-2
Hydric soil: No

MhB2—Miamian silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Miamian soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Celina soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 4.3 inches to a depth of 24 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to dense material
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow in the solum and very slow or slow in the dense till
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.

- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by the dense soil material and high clay content.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
- This soil is well suited to use as building sites.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

MhC2—Miamian silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Wisconsinan till plains
Position on the landform: Shoulders

Map Unit Composition

Miamian soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Celina soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 4.6 inches to a depth of 27 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to dense material
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow in the solum and very slow or slow in the dense till
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by the dense soil material and high clay content.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines and the seepage of poorly treated effluent is a concern.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

MhD2—Miamian silt loam, 12 to 18 percent slopes, eroded

Setting

Landform: Wisconsinan till plains
Position on the landform: Footslopes and shoulders

Map Unit Composition

Miamian soil and similar components: 95 percent
Dissimilar components: 5 percent

Contrasting Components

- Crosby soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 3.7 inches to a depth of 22 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to dense material
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderately slow in the solum and very slow or slow in the dense till
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.

- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The rooting depth of crops is restricted by the dense soil material and high clay content.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- Burning may destroy organic matter.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 4e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

MnE2—Miamian-Thrifton complex, 18 to 25 percent slopes, eroded

Setting

Landform: Wisconsinan till plains
Position on the landform: Backslopes

Map Unit Composition

Miamian soil and similar components: 70 percent
Thrifton soil and similar components: 20 percent
Dissimilar components: 10 percent

Contrasting Components

- Crouse soils: 10 percent

Soil Properties and Qualities

Available water capacity: Miamian—about 6.3 inches to a depth of 38 inches; Thrifton—about 2.8 inches to a depth of 19 inches
Cation-exchange capacity of the surface layer: Miamian—10 to 18 meq per 100 grams; Thrifton—14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Miamian—20 to 40 inches to dense material; Thrifton—10 to 20 inches to dense material
Depth to the top of the seasonal high water table: Miamian—2.5 to 3.5 feet; Thrifton—1.0 to 2.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Miamian—well drained; Thrifton—moderately well drained
Flooding: None
Organic matter content in the surface layer: Miamian—1.0 to 3.0 percent; Thrifton—0.5 to 2.0 percent
Parent material: Miamian—a thin layer of loess and the underlying till; Thrifton—basal till
Permeability: Miamian—moderately slow in the solum and slow or very slow in the dense till; Thrifton—moderately slow in the solum and slow in the underlying dense till
Potential for frost action: Moderate
Shrink-swell potential: Moderate

Surface layer texture: Miamian—silt loam; Thrifton—loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- In areas of the Thrifton soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- In areas of the Thrifton soil, using a system of conservation tillage when pastures are renovated conserves soil moisture.
- The Thrifton soil provides poor summer pasture.

Woodland

- If the soils are disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- Soil wetness may limit the use of log trucks in areas of the Thrifton soil.
- The stickiness of the Thrifton soil reduces the efficiency of mechanical planting equipment.
- In areas of the Thrifton soil, burning may destroy organic matter.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the Miamian soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.

- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, the Miamian soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, the Miamian soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 6e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-2
Hydric soil: No

MnF2—Miamian-Thrifton complex, 25 to 50 percent slopes, eroded

Setting

Landform: Wisconsinan till plains
Position on the landform: Backslopes

Map Unit Composition

Miamian soil and similar components: 70 percent
Thrifton soil and similar components: 25 percent
Dissimilar components: 5 percent

Contrasting Components

- Crouse soils: 5 percent

Soil Properties and Qualities

Available water capacity: Miamian—about 6.4 inches to a depth of 38 inches; Thrifton—about 2.7 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: Miamian—10 to 18 meq per 100 grams; Thrifton—14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Miamian—20 to 40 inches to dense material; Thrifton—10 to 20 inches to dense material
Depth to the top of the seasonal high water table: Miamian—2.5 to 3.5 feet; Thrifton—1.0 to 2.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Miamian—well drained; Thrifton—moderately well drained
Flooding: None
Organic matter content in the surface layer: Miamian—1.0 to 3.0 percent; Thrifton—0.5 to 2.0 percent

Parent material: Miamian—a thin layer of loess and the underlying till; Thrifton—basal till
Permeability: Miamian—moderately slow in the solum and slow or very slow the dense till; Thrifton—moderately slow in the solum and slow in the underlying dense till
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Miamian—silt loam; Thrifton—loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- These soils are generally not recommended for pasture.

Woodland

- If the soils are disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and of harvesting and mechanical planting equipment.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- Because of the slope, the use of equipment to prepare sites for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Soil wetness may limit the use of log trucks in areas of the Thrifton soil.
- The stickiness of the Thrifton soil reduces the efficiency of mechanical planting equipment.
- In areas of the Thrifton soil, burning may destroy organic matter.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the Miamian soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- In some areas of the Thrifton soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, the Miamian soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, the Miamian soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 7e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-3
Hydric soil: No

MoE2—Miamian-Crouse silt loams, 18 to 25 percent slopes, eroded

Setting

Landform: Wisconsinan terminal moraines
Position on the landform: Backslopes

Map Unit Composition

Miamian soil and similar components: 60 percent
Crouse soil and similar components: 30 percent
Dissimilar components: 10 percent

Contrasting Components

- Thrifton soils: 10 percent

Soil Properties and Qualities

Available water capacity: Miamian—about 5.7 inches to a depth of 33 inches; Crouse—about 11.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: Miamian—10 to 18 meq per 100 grams; Crouse—12 to 15 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Thrifton—20 to 40 inches to dense material; Crouse—more than 80 inches
Depth to the top of the seasonal high water table: Miamian—2.5 to 3.5 feet; Crouse—3.5 to 6.0 feet
Water table (kind): Perched
Ponding: None

Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: Miamian—1.0 to 3.0 percent; Crouse—0.5 to 2.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Miamian—moderately slow in the solum and slow or very slow the dense till; Crouse—moderate
Potential for frost action: Miamian—moderate; Crouse—high
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Miamian—very high; Crouse—high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- In areas of the Miamian soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- In areas of the Miamian soil, using a system of conservation tillage when pastures are renovated conserves soil moisture.
- The Miamian soil provides poor summer pasture.
- In areas of the Crouse soil, the root systems of plants may be damaged by frost action.

Woodland

- If the soils are disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and of harvesting and mechanical planting equipment.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- In areas of the Crouse soil, burning may destroy organic matter.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.

- In some areas of the Miamian soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas of the Miamian soil, the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 6e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-2
Hydric soil: No

MoF2—Miamian-Crouse silt loams, 25 to 50 percent slopes, eroded

Setting

Landform: Wisconsinan terminal moraines
Position on the landform: Backslopes

Map Unit Composition

Miamian soil and similar components: 60 percent
Crouse soil and similar components: 35 percent
Dissimilar components: 5 percent

Contrasting Components

- Thrifton soils: 5 percent

Soil Properties and Qualities

Available water capacity: Miamian—about 5.0 inches to a depth of 29 inches; Crouse—about 11.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: Miamian—10 to 18 meq per 100 grams; Crouse—12 to 15 meq per 100 grams

Depth class: Very deep
Depth to root-restrictive feature: Miamian—20 to 40 inches to dense material; Crouse—more than 80 inches
Depth to the top of the seasonal high water table: Miamian—2.5 to 3.5 feet; Crouse—3.5 to 6.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: Miamian—1.0 to 3.0 percent; Crouse—0.5 to 2.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Miamian—moderately slow in the solum and slow or very slow in the dense till; Crouse—moderate
Potential for frost action: Miamian—moderate; Crouse—high
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Miamian—very high; Crouse—high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Pastureland

- These soils are generally not recommended for pasture.

Woodland

- If the soils are disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and of harvesting and mechanical planting equipment.
- Because of the slope, the use of equipment to prepare sites for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The stickiness of the Miamian soil reduces the efficiency of mechanical planting equipment.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result in areas of the Crouse soil. The low soil strength may create unsafe conditions for log trucks.
- In areas of the Crouse soil, a loss of soil productivity may occur following an episode of fire.

Building sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building

maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.
- In some areas of the Miamian soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 7e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-3
Hydric soil: No

MvD2—Morrisville silty clay loam, 12 to 18 percent slopes, eroded

Setting

Landform: Illinoian till plains
Position on the landform: Footslopes and shoulders

Map Unit Composition

Morrisville soil and similar components: 80 percent
Dissimilar components: 20 percent

Contrasting Components

- Hickory soils: 10 percent
- Nicely soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 4.3 inches to a depth of 45 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Deep
Depth to root-restrictive feature: 40 to 60 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: 2.0 to 3.5 feet

Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till and the underlying residuum weathered from limestone and shale
Permeability: Moderately slow or slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.

- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The depth to bedrock and hardness of bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.

Septic tank absorption fields

- The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 4e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: B-1
Hydric soil: No

MvE2—Morrisville silty clay loam, 18 to 25 percent slopes, eroded

Setting

Landform: Illinoian till plains
Position on the landform: Backslopes

Map Unit Composition

Morrisville soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Hickory soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 4.9 inches to a depth of 54 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Deep
Depth to root-restrictive feature: 40 to 60 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: 2.0 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till and the underlying residuum weathered from limestone and shale
Permeability: Moderately slow or slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.

- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of the content of clay, this soil becomes sticky when wet. The stickiness increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and of harvesting and mechanical planting equipment.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The depth to bedrock and hardness of bedrock reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting

heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 6e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: B-1
Hydric soil: No

NhC2—Nicely silt loam, 6 to 12 percent slopes, eroded

Setting

Landform: Illinoian till plains
Position on the landform: Footslopes and shoulders

Map Unit Composition

Nicely soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Jonesboro soils: 5 percent
- Rossmoyne soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 9.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 19 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 1.5 to 2.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate in the upper part of the solum and moderately slow in the lower part
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.

- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines and the seepage of poorly treated effluent is a concern.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

OcA—Ockley silt loam, 0 to 2 percent slopes

Setting

Landform: Wisconsinan outwash terraces
Position on the landform: Treads

Map Unit Composition

Ockley soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Fox soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 8.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 to 15 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 70 inches to strongly contrasting textural stratification
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying outwash
Permeability: Moderate in the solum and very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low soil strength may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- This soil is well suited to use as sites for septic tank absorption fields.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

OcB—Ockley silt loam, 2 to 6 percent slopes

Setting

Landform: Wisconsinan outwash terraces
Position on the landform: Treads

Map Unit Composition

Ockley soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Fox soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 9.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 to 15 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 70 inches to strongly contrasting textural stratification
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying outwash
Permeability: Moderate in the solum and very rapid in the substratum
Potential for frost action: Moderate

Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

OdA—Ockley silt loam, till substratum, 0 to 2 percent slopes

Setting

Landform: Wisconsinan outwash terraces on till plains
Position on the landform: Treads

Map Unit Composition

Ockley soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Lumberton soils: 5 percent
- Miamian soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 11.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 16 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loess over outwash over till
Permeability: Moderate in the solum, very rapid in the underlying outwash material, and slow in the till material
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

OdB—Ockley silt loam, till substratum, 2 to 6 percent slopes

Setting

Landform: Wisconsinan outwash terraces on till plains
Position on the landform: Treads

Map Unit Composition

Ockley soil and similar components: 95 percent
Dissimilar components: 5 percent

Contrasting Components

- Fox soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 11.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 16 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet

Water table (kind): Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loess over outwash over till
Permeability: Moderate in the solum, very rapid in the underlying outwash material, and slow in the till material
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

OdC2—Ockley silt loam, till substratum, 6 to 12 percent slopes, eroded

Setting

Landform: Wisconsinan outwash terraces on till plains
Position on the landform: Risers

Map Unit Composition

Ockley soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Fox soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 11.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 4 to 14 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 1.5 percent
Parent material: Loess over outwash over till
Permeability: Moderate in the solum, very rapid in the underlying outwash material, and slow in the till material
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. Special design of structures is needed to prevent damage caused by wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability limits the proper treatment of the effluent from septic systems. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.
- The seasonal high water table limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

OeA—Odell silt loam, 0 to 2 percent slopes

Setting

Landform: Flats on the Wisconsinan till plains
Position on the landform: Summits

Map Unit Composition

Odell soil and similar components: 100 percent

Soil Properties and Qualities

Available water capacity: About 9.5 inches to a depth of 55 inches
Cation-exchange capacity of the surface layer: 11 to 25 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 35 to 59 inches to dense material
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: A thin layer of loess and the underlying till
Permeability: Moderate in the subsoil and slow in the underlying till
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: No

Pg—Pits, gravel

Setting

Landform: None assigned
Size of areas: 5 to 50 acres
Shape of areas: Irregular

Map Unit Composition

Pits, gravel, and similar components: 100 percent

Use and Management Considerations

Onsite investigation is needed to determine the suitability of this map unit for specific uses.

Interpretive Groups

Land capability classification: None assigned
Prime farmland: Not prime farmland
Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

Pk—Pits, quarry

Setting

Landform: None assigned
Size of areas: 5 to 200 acres
Shape of areas: Irregular

Map Unit Composition

Pits, quarry, and similar components: 100 percent

Use and Management Considerations

Onsite investigation is needed to determine the suitability of this map unit for specific uses.

Interpretive Groups

Land capability classification: None assigned
Prime farmland: Not prime farmland
Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

RcA—Randolph silt loam, 0 to 2 percent slopes

Setting

Landform: Flats and areas along drainageways on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Randolph soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Miamian soils: 5 percent
- Sloan soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 6.2 inches to a depth of 37 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over residuum weathered from limestone
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Soil wetness may limit the use of log trucks.

- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The depth to bedrock and hardness of bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- Because of the limited depth to bedrock, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- The depth to bedrock and hardness of bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 3w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-2
Hydric soil: No

ReA—Reesville silt loam, 0 to 2 percent slopes

Setting

Landform: Flats on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Reesville soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Treaty soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.7 inches to a depth of 54 inches

Cation-exchange capacity of the surface layer: 10 to 26 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 30 to 60 inches to dense material
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate in the solum and moderately slow or slow in the underlying material
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: No

ReB—Reesville silt loam, 2 to 4 percent slopes

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Reesville soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Birkbeck soils: 5 percent
- Treaty soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 9.4 inches to a depth of 48 inches
Cation-exchange capacity of the surface layer: 10 to 26 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 30 to 60 inches to dense material
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate in the solum and moderately slow or slow in the underlying material

Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Erosion control is needed when pastures are renovated.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: No

RnA—Ross loam, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flood plains

Map Unit Composition

Ross soil and similar components: 95 percent
Dissimilar components: 5 percent

Contrasting Components

- Sloan soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 9.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 26 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Well drained
Flooding: Occasional
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic tank absorption fields

- This soil is generally unsuited to septic tank absorption fields. Because of the flooding, the absorption and proper treatment of the effluent from septic systems are greatly limited. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-5
Hydric soil: No

RoA—Ross silt loam, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Flood plains

Map Unit Composition

Ross soil and similar components: 95 percent
Dissimilar components: 5 percent

Contrasting Components

- Sloan soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 9.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 26 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Well drained
Flooding: Frequent
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- Winter grain crops are commonly not grown because of the frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.

- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The frequent flooding greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.

Septic tank absorption fields

- This soil is generally unsuited to septic tank absorption fields. Because of the flooding, the absorption and proper treatment of the effluent from septic systems are greatly limited. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if protected from flooding or not frequently flooded during the growing season
Pasture and hayland suitability group: A-5
Hydric soil: No

RsA—Rossburg silt loam, 0 to 2 percent slopes, rarely flooded

Setting

Landform: Slight rises on flood plains

Map Unit Composition

Rossburg soil and similar components: 85 percent
Dissimilar components: 15 percent

Contrasting Components

- Ockley soils: 5 percent
- Sligo soils: 5 percent
- Sloan soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 10.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 32 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 3.5 to 6.0 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Well drained

Flooding: Rare
Organic matter content in the surface layer: 4.0 to 8.0 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderately rapid in the underlying material
Potential for frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- Under unusual weather conditions, this soil is subject to rare flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent the damage caused by flooding.

Septic tank absorption fields

- This soil is generally unsuited to septic tank absorption fields. Because of the flooding, the absorption and proper treatment of the effluent from septic systems are greatly limited. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

RuB2—Russell-Xenia silt loams, 2 to 6 percent slopes, eroded

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders

Map Unit Composition

Russell soil and similar components: 60 percent
Xenia soil and similar components: 20 percent
Dissimilar components: 20 percent

Contrasting Components

- Miamian soils: 10 percent
- Celina soils: 5 percent
- Fincastle soils: 5 percent

Soil Properties and Qualities

Available water capacity: Russell—about 9.1 inches to a depth of 49 inches; Xenia—about 8.1 inches to a depth of 43 inches
Cation-exchange capacity of the surface layer: Russell—5 to 19 meq per 100 grams; Xenia—6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the top of the seasonal high water table: Russell—3.5 to 6.0 feet; Xenia—2.0 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Russell—well drained; Xenia—moderately well drained
Flooding: None
Organic matter content in the surface layer: Russell—0.5 to 2.0 percent; Xenia—1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Russell—moderate in the solum and slow or very slow in the underlying material; Xenia—moderate or moderately slow in the solum and slow or very slow in the underlying dense till
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight
Distinctive soil properties: Removal of part of original surface layer; 22 to 40 inches of loess over till material

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.

Figure 10.—Russell and Xenia soils are well suited to hayland.

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.
- These soils are well suited to hayland (fig. 10).

Woodland

- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment.
- In areas of the Russell soil, burning may destroy organic matter.

Building sites

- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas of the Russell soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site

development, and structures may need special design to avoid damage from wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

SaA—Sardinia silt loam, 0 to 2 percent slopes

Setting

Landform: Stream terraces
Position on the landform: Treads

Map Unit Composition

Sardinia soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Williamsburg soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Stratified silty and loamy outwash or old aluvium
Permeability: Moderate or moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate

Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

SaB—Sardinia silt loam, 2 to 6 percent slopes

Setting

Landform: Stream terraces
Position on the landform: Treads

Map Unit Composition

Sardinia soil and similar components: 85 percent
Dissimilar components: 15 percent

Contrasting Components

- Williamsburg soils: 10 percent
- Taggart soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 11.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Stratified silty and loamy outwash or old aluvium
Permeability: Moderate or moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate

and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

ScA—Secondcreek silt loam, 0 to 1 percent slopes, overwash

Setting

Landform: Glacial lake (relict) on the Illinoian till plain

Map Unit Composition

Secondcreek soil and similar components: 90 percent
Dissimilar soils: 10 percent

Contrasting Components

- Blanchester soils: 5 percent
- Westboro soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 10.6 inches to a depth of 60 inches

Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 1.0 foot for very long periods
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Lacustrine sediments and the underlying till
Permeability: Very slow or slow
Potential for frost action: High
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil that facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building

maintenance may be needed. This soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: Yes

SeA—Secondcreek silty clay loam, 0 to 1 percent slopes

Setting

Landform: Glacial lake (relict) on the Illinoian till plain

Map Unit Composition

Secondcreek soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Blanchester soils: 5 percent
- Westboro soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 10.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 16 to 23 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 1.0 foot for very long periods
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Lacustrine sediments and the underlying till
Permeability: Very slow or slow
Potential for frost action: High

Shrink-swell potential: High
Surface layer texture: Silty clay loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil that facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. This soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: Yes

ShA—Shoals silt loam, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flood plains

Map Unit Composition

Shoals soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Sligo soils: 5 percent
- Sloan soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 27 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 0.5 foot to 1.5 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: Occasional
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loamy alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- This soil is generally unsuited to septic tank absorption fields. Because of the flooding, the absorption and proper treatment of the effluent from septic systems are greatly limited. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-3
Hydric soil: No

SmA—Sligo silt loam, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flood plains

Map Unit Composition

Sligo soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Sloan soils: 5 percent
- Stringley soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 12.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 15 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 2.5 to 3.5 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Occasional
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loamy alluvium
Permeability: Moderate
Potential for frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- This soil is generally unsuited to septic tank absorption fields. Because of the flooding, the absorption and proper treatment of the effluent from septic systems are greatly limited. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-5
Hydric soil: No

SnA—Sloan silt loam, sandy substratum, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flood plains

Map Unit Composition

Sloan soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Ross soils: 5 percent
- Sligo soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 12.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 26 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 foot
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 1.0 foot for very long periods
Drainage class: Very poorly drained
Flooding: Occasional
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Loamy alluvium
Permeability: Moderate or moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of log trucks.
- Flooding and ponding restrict the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. This soil is generally unsuited to building site development.

Septic tank absorption fields

- This soil is generally unsuited to septic tank absorption fields. Because of the flooding, the absorption and proper treatment of the effluent from septic systems are greatly limited. Rapidly moving floodwaters may damage some components of septic systems.
- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 3w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-3
Hydric soil: Yes

SrA—Stringley-Sligo loams, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Flood plains

Map Unit Composition

Stringley soil and similar components: 60 percent
Sligo soil and similar components: 30 percent
Dissimilar components: 10 percent

Contrasting Components

- Sloan soils: 10 percent

Soil Properties and Qualities

Available water capacity: Stringley—about 10.0 inches to a depth of 60 inches; Sligo—about 11.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: Stringley—12 to 18 meq per 100 grams; Sligo—9 to 15 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: Stringley—3.5 to 6.0 feet; Sligo—2.5 to 3.5 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Stringley—well drained; Sligo—moderately well drained
Flooding: Occasional
Organic matter content in the surface layer: Stringley—0.5 to 2.0 percent; Sligo—1.0 to 2.0 percent
Parent material: Stringley—calcareous stratified alluvium; Sligo—loamy alluvium
Permeability: Stringley—moderately rapid in the upper subtratum and very rapid in the lower substratum; Sligo—moderate
Potential for frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Stringley—very low; Sligo—low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Measures that protect the soils from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The high pH and the high content of lime in the upper part of the Stringley soil may cause a nutrient imbalance in seedlings.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- Burning may destroy organic matter.

Building sites

- Under normal weather conditions, these soils are subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. The soils are generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
- Because of the high content of sand or gravel in the soils, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- These soils are generally unsuited to septic tank absorption fields. Because of the flooding, the absorption and proper treatment of the effluent from septic systems are greatly limited. Rapidly moving floodwaters may damage some components of septic systems.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.
- In areas of the Sligo soil, special design of roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-5
Hydric soil: No

TaA—Taggart silt loam, 0 to 2 percent slopes

Setting

Landform: Illinoian outwash terraces
Position on the landform: Treads

Map Unit Composition

Taggart soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Libre soils: 5 percent
- Sardinia soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 11.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 4 to 17 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 1.0 to 1.5 feet
Water table (kind): Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying loamy outwash
Permeability: Moderate in the upper part of the solum and slow in the lower part
Potential for frost action: High
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building

maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: No

TpA—Treaty silt loam, 0 to 1 percent slopes, overwash

Setting

Landform: Flats and depressions on the Wisconsinan till plain

Map Unit Composition

Treaty soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Reesville soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 17 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 foot
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 0.5 foot for very long periods
Drainage class: Poorly drained
Flooding: None
Organic matter content in the surface layer: 4.0 to 6.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate in the solum and moderately slow in the underlying material
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam

Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. This soil is generally unsuited to building site development.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w

Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: Yes

TrA—Treaty silty clay loam, 0 to 1 percent slopes

Setting

Landform: Flats and depressions on the Wisconsinan till plain

Map Unit Composition

Treaty soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Reesville soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 27 to 36 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 foot
Water table (kind): Apparent
Ponding (depth and duration): 0.0 to 0.5 foot for very long periods
Drainage class: Poorly drained
Flooding: None
Organic matter content in the surface layer: 4.0 to 6.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate in the solum and moderately slow in the underlying material
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. This soil is generally unsuited to building site development.

Septic tank absorption fields

- Because of ponding, this soil is generally unsuitable as sites for septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: C-1
Hydric soil: Yes

Ud—Udorthents, loamy

Setting

Landform: Disturbed areas
Size of areas: 5 to 100 acres
Shape of areas: Irregular

Map Unit Composition

Udorthents and similar components: 100 percent

Use and Management Considerations

Onsite investigation is needed to determine the suitability of this map unit for specific uses.

Interpretive Groups

Land capability classification: None assigned
Prime farmland: Not prime farmland
Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

W—Water

Setting

Landform: Bodies of water

Map Unit Composition

Water and similar components: 100 percent

Use and Management Considerations

Onsite investigation is needed to determine the suitability of this map unit for specific uses.

Interpretive Groups

Land capability classification: None assigned
Prime farmland: Not prime farmland
Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

WaC3—Wapahani-Miamian clay loams, 6 to 12 percent slopes, severely eroded

Setting

Landform: Wisconsinan till plains
Position on the landform: Shoulders

Map Unit Composition

Wapahani soil and similar components: 70 percent
Miamian soil and similar components: 20 percent
Dissimilar components: 10 percent

Contrasting Components

- Thrifton soils: 5 percent
- Xenia soils: 5 percent

Soil Properties and Qualities

Available water capacity: Wapahani—about 2.3 inches to a depth of 18 inches; Miamian—about 4.4 inches to a depth of 28 inches
Cation-exchange capacity of the surface layer: Wapahani—13 to 16 meq per 100 grams; Miamian—14 to 20 meq per 100 grams
Depth class: Very deep

Depth to root-restrictive feature: Wapahani—10 to 20 inches to dense material; Miamian—20 to 40 inches to dense material
Depth to the top of the seasonal high water table: Wapahani—1.0 to 2.0 feet; Miamian—2.5 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Wapahani—moderately well drained; Miamian—well drained
Flooding: None
Organic matter content in the surface layer: Wapahani—0.5 to 1.0 percent; Miamian—0.5 to 2.0 percent
Parent material: Wapahani—till; Miamian—a thin layer of loess and the underlying till
Permeability: Wapahani—moderately slow in the solum and slow or very slow in the underlying dense till; Miamian—moderately slow in the solum and slow in the underlying dense till
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Wapahani—very high; Miamian—high
Wind erosion hazard: Slight
Distinctive soil property: Removal of all the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soils to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- In areas of the Wapahani soil, the movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- In areas of the Wapahani soil, subsurface drainage helps to lower the seasonal high water table.
- The rooting depth of crops is restricted by the dense soil material and the high clay content in the Miamian soil.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- These soils provide poor summer pasture.

Woodland

- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the Wapahani soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks in areas of the Wapahani soil.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.
- The moderate shrinking and swelling of the Miamian soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines and the seepage of poorly treated effluent is a concern.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- In areas of the Wapahani soil, the seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- Because of the slope, designing local roads and streets is difficult.
- Because of shrinking and swelling, the Miamian soil may not be suitable as base material for local roads and streets.
- Because of the low bearing strength, the Miamian soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 4e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: Wapahani—B-1; Miamian—A-1
Hydric soil: No

WaD3—Wapahani-Miamian clay loams, 12 to 18 percent slopes, severely eroded

Setting

Landform: Wisconsinan till plains
Position on the landform: Footslopes and shoulders

Map Unit Composition

Wapahani soil and similar components: 60 percent
Miamian soil and similar components: 30 percent
Dissimilar components: 10 percent

Contrasting Components

- Thrifton soils: 10 percent

Soil Properties and Qualities

Available water capacity: Wapahani—about 2.4 inches to a depth of 19 inches; Miamian—about 3.7 inches to a depth of 24 inches
Cation-exchange capacity of the surface layer: Wapahani—13 to 16 meq per 100 grams; Miamian—14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Wapahani—10 to 20 inches to dense material; Miamian—20 to 40 inches to dense material
Depth to the top of the seasonal high water table: Wapahani—1.0 to 2.0 feet; Miamian—2.5 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Wapahani—moderately well drained; Miamian—well drained
Flooding: None
Organic matter content in the surface layer: Wapahani—0.5 to 1.0 percent; Miamian—0.5 to 2.0 percent
Parent material: Wapahani—till; Miamian—a thin layer of loess and the underlying till
Permeability: Wapahani—moderately slow in the solum and slow or very slow in the underlying dense till; Miamian—moderately slow in the solum and slow in the underlying dense till
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Wapahani—very high; Miamian—high
Wind erosion hazard: Slight
Distinctive soil property: Removal of all the original surface layer

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soils to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Controlling traffic can minimize soil compaction.

- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- In areas of the Wapahani soil, the movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- In areas of the Wapahani soil, subsurface drainage helps to lower the seasonal high water table.
- The rooting depth of crops is restricted by the dense soil material and the high clay content in the Miamian soil.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- These soils provide poor summer pasture.

Woodland

- If the soils are disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during the construction of haul roads and log landings.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks in areas of the Wapahani soil.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing sites for planting and seeding.
- Burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for effluent distribution lines.

- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.
- In areas of the Miamian soil, special design of roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 6e
Prime farmland: Not prime farmland
Pasture and hayland suitability group: Wapahani—B-1; Miamian—A-1
Hydric soil: No

WcA—Westboro-Schaffer silt loams, 0 to 2 percent slopes

Setting

Landform: Flats on the Illinoian till plain
Position on the landform: Summits

Map Unit Composition

Westboro soil and similar components: 70 percent
Schaffer soil and similar components: 20 percent
Dissimilar components: 10 percent

Contrasting Components

- Clermont soils: 5 percent
- Jonesboro soils: 5 percent

Soil Properties and Qualities

Available water capacity: Westboro—about 11.0 inches to a depth of 60 inches; Schaffer—about 5.4 inches to a depth of 26 inches
Cation-exchange capacity of the surface layer: 6 to 12 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Westboro—more than 80 inches; Schaffer—20 to 36 inches to a fragipan
Depth to the top of the seasonal high water table: Westboro—0.5 foot to 2.0 feet; Schaffer—0.5 foot to 1.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loess and the underlying till
Permeability: Westboro—moderate in the upper part of the solum and moderately slow in the lower part; Schaffer—slow or moderately slow above the fragipan and very slow in the fragipan
Potential for frost action: High

Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Westboro—low; Schaffer—high
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the Schaffer soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- In areas of the Schaffer soil, the rooting depth of crops is restricted by the dense soil material.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.
- In areas of the Schaffer soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- In areas of the Schaffer soil, using a system of conservation tillage when pastures are renovated conserves soil moisture.
- The Schaffer soil provides poor summer pasture.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas of the Schaffer soil, the dense nature of the subsurface layer

increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of these soils.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: Westboro—C-1; Schaffer—C-2
Hydric soil: No

WcB—Westboro-Schaffer silt loams, 2 to 4 percent slopes

Setting

Landform: Slight rises on the Illinoian till plain
Position on the landform: Summits

Map Unit Composition

Westboro soil and similar components: 65 percent
Schaffer soil and similar components: 20 percent
Dissimilar components: 15 percent

Contrasting Components

- Jonesboro soils: 10 percent
- Rossmoyne soils: 5 percent

Soil Properties and Qualities

Available water capacity: Westboro—about 10.8 inches to a depth of 60 inches; Schaffer—about 5.7 inches to a depth of 28 inches
Cation-exchange capacity of the surface layer: 6 to 12 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: Westboro—more than 80 inches; Schaffer—20 to 36 inches to a fragipan
Depth to the top of the seasonal high water table: Westboro—0.5 foot to 2.0 feet; Schaffer—0.5 foot to 1.5 feet

Water table (kind): Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loess and the underlying till
Permeability: Westboro—moderate in the upper part of the solum and moderately slow in the lower part; Schaffer—slow or moderately slow above the fragipan and very slow in the fragipan
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Westboro—low; Schaffer—high
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soils helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- In areas of the Schaffer soil, incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- In areas of the Schaffer soil, the movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- In areas of the Schaffer soil, the rooting depth of crops is restricted by the dense soil material.

Pastureland

- Erosion control is needed when pastures are renovated.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.
- In areas of the Schaffer soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- In areas of the Schaffer soil, using a system of conservation tillage when pastures are renovated conserves soil moisture.
- The Schaffer soil provides poor summer pasture.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of log trucks.
- Because of the low soil strength, harvesting equipment may be difficult to operate

and damage may result. The low soil strength may create unsafe conditions for log trucks.
- Burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. These soils are poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas of the Schaffer soil, the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of these soils.
- Because of the low bearing strength, these soils are generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: Prime farmland if drained
Pasture and hayland suitability group: Westboro—C-1; Schaffer—C-2
Hydric soil: No

WmA—Williamsburg silt loam, 0 to 2 percent slopes

Setting

Landform: Stream terraces
Position on the landform: Treads

Map Unit Composition

Williamsburg soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Sardinia soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin mantle of loess and stratified outwash of silty and loamy material with some gravel
Permeability: Moderate
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

WmB—Williamsburg silt loam, 2 to 6 percent slopes

Setting

Landform: Stream terraces
Position on the landform: Treads

Map Unit Composition

Williamsburg soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Sardinia soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 9.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the top of the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: A thin mantle of loess and stratified outwash of silty and loamy material with some gravel
Permeability: Moderate
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.

Building sites

- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-1
Hydric soil: No

XaA—Xenia silt loam, 0 to 2 percent slopes

Setting

Landform: Flats on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Xenia soil and similar components: 80 percent
Dissimilar components: 20 percent

Contrasting Components

- Fincastle soils: 10 percent
- Celina soils: 5 percent
- Treaty soils: 5 percent

Soil Properties and Qualities

Available water capacity: About 11.0 inches to a depth of 58 inches
Cation-exchange capacity of the surface layer: 6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 59 inches to dense material

Depth to the top of the seasonal high water table: 2.0 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate or moderately slow in the solum and slow in the underlying dense till
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

XaB—Xenia silt loam, 2 to 6 percent slopes

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits

Map Unit Composition

Xenia soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Fincastle soils: 4 percent
- Russell soils: 3 percent
- Treaty soils: 3 percent

Soil Properties and Qualities

Available water capacity: About 10.4 inches to a depth of 55 inches
Cation-exchange capacity of the surface layer: 6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 59 inches to dense material
Depth to the top of the seasonal high water table: 2.0 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loess and the underlying till
Permeability: Moderate or moderately slow in the solum and slow in the underlying dense till
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

XaB2—Xenia silt loam, 2 to 6 percent slopes, eroded

Setting

Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders

Map Unit Composition

Xenia soil and similar components: 90 percent
Dissimilar components: 10 percent

Contrasting Components

- Miamian soils: 10 percent

Soil Properties and Qualities

Available water capacity: About 10.3 inches to a depth of 56 inches
Cation-exchange capacity of the surface layer: 4 to 18 meq per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 59 inches to dense material
Depth to the top of the seasonal high water table: 2.0 to 3.5 feet
Water table (kind): Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.5 percent
Parent material: Loess and the underlying till
Permeability: Moderate or moderately slow in the solum and slow in the underlying dense till
Potential for frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight
Distinctive soil property: Removal of part of the original surface layer

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and minimize erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low soil strength increases the cost of constructing haul roads and log landings.
- Because of the low soil strength, harvesting equipment may be difficult to operate and damage may result. The low soil strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building sites

- The seasonal high water table may restrict the period when excavations can be made, and a higher degree of construction site development and building maintenance may be required. This soil is poorly suited to building site development, and structures may need special design to avoid damage from wetness.
- The moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from septic systems.
- Because of the seasonal high water table, the absorption and proper treatment of the effluent from septic systems are greatly limited. Costly measures may be needed to lower the water table in the area of the absorption field.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the low bearing strength, this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by the low soil strength.

Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland
Pasture and hayland suitability group: A-6
Hydric soil: No

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, slightly limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately well suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact

on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Interpretive Groups

Interpretive groups are specified land use and specific management groupings that are assigned to soil areas because combinations of soils have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. These groups allow users of soil surveys to plan reasonable alternatives for the use and management of soils.

Table 28 shows the interpretive groups for land capability classification; pasture and hayland suitability groups; prime farmland; and hydric condition of each soil in the survey area.

Land capability classification is a system of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deterioration over a long period of time. The table shows the land capability class and subclass for each of the soils in Clinton County. Additional information on land capability classification is provided under the heading “Land Capability Classification.”

Pasture and hayland suitability groups are composed of soil map units having similar potentials and limitations for forage production. These groups simplify soils information and provide soil and plant science information for planning purposes. The table shows the pasture and hayland suitability group for each of the soils in Clinton County. Additional information on pasture and hayland suitability groups is provided under the heading “Pasture and Hayland Suitability Groups.”

Prime farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops. This identification is useful in the management and maintenance of the resource base that supports the productive capacity of Ohio agriculture. The table shows which of the soils in Clinton County are prime farmland. Additional information on prime farmland is provided under the heading “Prime Farmland.”

The identification of hydric soils and information about hydrophytic vegetation and wetland hydrology are used to define wetlands. The table shows which of the soils in Clinton County are hydric. Additional information on hydric soils is provided under the heading “Hydric Soils.”

Crops and Pasture

General management needed for crops and pasture is suggested in this section.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Ohio State University Extension.

Cropland Management

Robert Coblentz, District Conservationist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops is suggested in this section. The crops best suited to the soils, including some not commonly grown in the survey area, are identified; the crop yield index and the system of land capability classification used by the Natural Resources Conservation Service are explained; the estimated yields of the main crops and hay plants are listed for each soil; and prime farmland is discussed.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil in the section “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Ohio State University Extension.

In l985, about 194,100 acres in Clinton County were used for cropland. In l985, about 16,000 acres were pastured *(36).* Yearly fluctuations occur in the acreage devoted to each specific crop due to the market value of each product. Higher livestock prices increase the amount of cropland used as pastureland and hayland.

The potential for increased food production is good in the county. Extending the latest crop production technology to all of the cropland in the county can increase this production. This soil survey can greatly facilitate the application of such technology. The major management needs for the cropland in the county are measures that control erosion, improve drainage, and improve or help maintain fertility and tilth.

Erosion is a hazard on all of the gently sloping to very steep soils in the county. It reduces soil productivity and results in deterioration of tilth. It also increases the amount of sediment, herbicides, and pesticides that enter waterways and streams. The erodibility of a particular soil depends in part on the physical properties of the soil. For example, Xenia soils, which have a high content of silt in the surface layer, are more susceptible to erosion than Miamian soils on comparable slopes and under a similar vegetative cover. The hazard of erosion on all soils increases as the percentage of slope increases. On eroded soils, preparing a seedbed and tilling are difficult because part of the original friable surface layer has been removed by erosion. Such eroded areas are common where the eroded Thrifton and Miamian soils occur.

A protective plant cover increases the rate of water infiltration and reduces the runoff rate and the hazard of erosion. Keeping a plant cover on the soil for extended periods can hold soil losses to an amount that will not reduce the productivity of the soil. Including grasses and forage legumes in the cropping sequence reduces the risk of erosion, increases crop biomass production, helps to maintain organic matter levels, increases the supply of nitrogen, and improves tilth.

Soil loss also can be reduced by tillage methods that leave the entire crop residue on the surface throughout the year or incorporate part of the residue into the soil. If these methods are applied, a high level of management is needed to control weeds, insects, and disease. These methods are best suited to well drained and moderately well drained soils. A drainage system is beneficial for no-till farming and other conservation tillage systems that leave crop residue on the soil surface. It is especially important on somewhat poorly drained to very poorly drained soils.

Drainage removes excessive water from the soil, which allows the soil to warm in the spring. Because of the reduced use of legumes and grasses in crop rotations, conservation tillage has become the most widely used erosion-control system in the county *(21)*.

Other erosion-control measures include grassed waterways (fig. 11), contour farming, and cropping systems that return large amounts of biomass to the soil (e.g., corn). Grassed waterways are natural or constructed surface drains protected by a cover of grasses. Natural drainageways are the best sites for these waterways because they commonly require a minimum of shaping. The waterways should be wide with gentle side slopes so that they can be easily crossed by farm machinery.

Information about the design of erosion-control practices for each kind of soil is available at the local office of the Natural Resources Conservation Service.

Soil drainage is a major management need on Clermont, Crosby, Kokomo, Schaffer, Treaty, and Westboro soils if they are used for cropland. Some soils are naturally so wet that the production of crops common to the survey area is generally not possible without artificial drainage. Surface and subsurface drains are used to improve drainage. Finding adequate outlets for subsurface drainage systems is difficult in many areas of

Figure 11.—Grassed waterways can reduce the damage caused by erosion on the sloping soils.

Blanchester and Clermont soils. Surface drainage is most commonly used on these soils. Other soils, such as Fincastle and Reesville, benefit from subsurface drainage.

Protection from flooding is needed on soils on flood plains, such as Sligo and Sloan. Levees are used in some areas to protect these soils from stream overflow.

Soil fertility is naturally acid in the surface layer. Applications of ground limestone are needed to raise the pH level sufficiently for good production of alfalfa and other crops that grow well on nearly neutral soils. Ground limestone is also a good source of the elemental calcium needed by crops. The supply of available phosphorus and potassium is naturally low in most of these soils. Additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and the expected level of yields. Assistance in determining the kinds and amounts of lime and fertilizer to be applied can be obtained from the local office of the Ohio State University Extension or the Natural Resources Conservation Service.

Soil tilth is an important factor affecting the germination of seeds and the infiltration of water into the soil. Soils that have good tilth are friable and porous.

Many of the soils used for crops in the county have a light-colored surface layer of silt loam that has a moderate or moderately low content of organic matter. Generally, the structure of these soils is weak. A surface crust forms during periods of heavy rainfall where conventional tillage methods are used. The crust is hard when dry and is nearly impervious to water. As a result, it reduces the rate of water infiltration and

increases the runoff rate. No-tillage farming or including grasses or legumes in a crop rotation can improve water infiltration. Regular additions of crop residue, barnyard manure, or other organic material can improve soil structure and minimize crusting.

Fall plowing is generally not a good means of improving the tilth of soils that have a light-colored surface layer. If these soils are plowed in the fall, a crust forms in winter and spring. Many soils that are plowed in the fall are nearly as dense and hard at planting time as they were before they were plowed.

Fall plowing is common on Crosby, Kokomo, and Miamian soils on till plains. Because of the erosion hazard, soils that have slopes of more than 3 percent should not be plowed in the fall. Wind erosion is a slight hazard in all areas that are plowed in the fall, including nearly level areas.

Some of the soils in the county do not dry out quickly enough for plowing early in spring. The fields are often plowed in the spring before optimum moisture conditions are reached. This untimely plowing results in hard clods in the surface layer and zones of compacted soil in the subsurface. Fall conservation tillage that leaves 50 percent or more residue cover on the flatter wet soils is an acceptable alternative system.

Cropland Limitations and Hazards

The management concerns affecting the use of the detailed soil map units in the survey area for crops are shown in table 5. The main concerns in managing nonirrigated cropland are controlling flooding, soil blowing, and erosion; preventing ground-water pollution; removing excess water; minimizing surface crusting and compaction; and maintaining soil tilth, the content of organic matter, and fertility.

Generally, a combination of several practices is needed to control *soil blowing* and *water erosion*. Conservation tillage, stripcropping, field windbreaks, tall grass barriers, contour farming, conservation cropping systems, crop residue management, diversions, and grassed waterways help to prevent excessive soil loss.

Surface and/or subsurface drainage is used to remove *excess water*, lower the *seasonal high water table*, and reduce *ponding.*

A *surface crust* forms in tilled areas after hard rains. This crust may inhibit seedling emergence. Regular additions of crop residue, manure, or other organic materials improve soil structure and minimize crusting. Tilling within the proper range in moisture content minimizes *compaction*.

Measures that are effective in maintaining *soil tilth, the content of organic matter,* and *fertility* include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Controlling erosion helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All soils used for nonirrigated crops respond well to applications of fertilizer.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are *flooding, ponding, slope,* and *depth to bedrock.*

Flooding.—Flooding can damage winter grain and forage crops. A tillage method that partly covers the soil with crop residue and leaves a rough or ridged surface helps to prevent the removal of crop residue by floodwater. Tilling and planting should be delayed in the spring until flooding is no longer a hazard.

Ponding.—Surface drains help to remove excess surface water and prevent damage from ponding.

Slope.—Where the slope is more than 25 percent, water erosion is excessive. The selection of crops and the use of equipment are limited. Cultivation may be restricted.

Depth to bedrock.—Rooting depth and available moisture may be limited by bedrock within a depth of 40 inches.

Additional limitations and hazards are as follows:

Potential for ground-water pollution.—This is a hazard in soils that have excessive permeability, are moderately deep or shallow over bedrock, or have a water table within the profile.

Limited available water capacity, poor tilth, restricted permeability, and *surface crusting*.—These limitations can be partially overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems.

Wind erosion.—Some soils are vulnerable to wind erosion. Wind can remove a significant amount of soil, and the particles carried by wind can act as an abrasive on leaves and other tissues. The hazard of wind erosion can be reduced by maintaining vegetative cover and planting windbreaks and by controlling the water table in areas of muck.

Frost action.—Frost action can damage deep-rooted legumes and some small grains.

Sandy layers.—Deep leaching of nutrients and pesticides may result in areas of sandy layers. Applications of lime and fertilizer are needed where there are sandy layers. Crops generally respond better to smaller, more frequent applications of fertilizer and lime than to one large application.

Clodding.—Clods may inhibit germination, reduce the rate of water infiltration, and increase the runoff rate.

Subsidence of muck.—Subsidence or shrinking occurs as a result of oxidation in the muck after the soil is drained. Control of the water table by subirrigation through subsurface drain lines reduces the hazards of subsidence, burning, and soil blowing.

High clay content.—The high clay content in the soil reduces rooting depth and limits water movement.

Root-restrictive layers.—Root-restrictive layers limit root growth and water movement.

Excessive alkalinity.—A high pH in the upper part of the soil may inhibit plant growth and reduce the availability of potassium and micronutrients.

Excessive acidity.—A low pH in the upper part of the soil may increase concentrations of aluminum and manganese and may injure plants.

Gravelly surface.—This limitation causes rapid wear of tillage equipment. It cannot be easily overcome.

Stony surface.—Stones or boulders on the surface can hinder normal tillage unless they are removed.

The following is an explanation of the criteria used to determine the limitations or hazards for cropland.

Areas of rock outcrop.—Rock outcrop is a named component of the map unit.

Areas of rubble land.—Rubble land is a named component of the map unit.

Areas of slick spots.—Slick spots are a named component of the map unit.

Channeled.—The word “channeled” is included in the name of the map unit.

Easily eroded.—The surface K factor multiplied by the relative value of the slope is more than 2 (same as prime farmland criteria).

Erosion hazard.—The relative value of the slope is greater than 2.

Frequent flooding.—The component of the map unit is frequently flooded.

Occasional flooding.—The component of the map unit is occasionally flooded.

Gullied.—The word “gullied” is included in the name of the map unit.

Lack of timely precipitation.—The component of the map unit has a Xeric moisture regime. The amount of annual precipitation is no more than 14 inches.

Lime content.—The component is assigned to wind erodibility group 4L or has more than 5 percent lime in the upper 10 inches.

Limited available water capacity.—The available water capacity calculated to a depth of 60 inches or to a root-limiting layer is 6 inches or less.

Ponding.—Ponding duration is assigned to the component of the map unit.

Ponded for extended periods.—Ponding for very long periods is assigned to the component of the map unit.

Gravelly surface.—The surface texture has a flaggy, very flaggy, extremely flaggy, very gravelly, extremely gravelly, or very channery modifier.

Stony surface.—The surface texture has a bouldery, very bouldery, extremely bouldery, stony, very stony, extremely stony, cobbly, very cobbly, or extremely cobbly modifier.

Sandy layers.—The family particle size is sandy, sandy or sandy-skeletal, sandy over loamy, sandy over clayey, sandy-skeletal, sandy-skeletal over clayey, or sandy-skeletal over loamy; the subgroup is Arenic or Psammentic; or the suborder is Psamments.

Depth to bedrock.—Bedrock is at a depth of less than 40 inches.

High potential for ground-water pollution.—Hard bedrock is within a depth of 40 inches, or permeability is more than 6 inches per hour in some layer within a depth of 80 inches and is not 0.2 inch per hour or less in some layer within that depth.

Moderate potential for ground-water pollution.—An apparent water table is within a depth of 4 feet, or permeability is moderately rapid in some layer between depths of 24 and 60 inches and is not 0.2 inch per hour or less in some layer within a depth of 80 inches.

Poor tilth.—The component of the map unit is severely eroded, has less than 1 percent organic matter in the surface layer, or has 35 percent or more clay in the surface layer.

Fair tilth.—The component of the map unit has a surface layer of silty clay loam or clay loam and has less than 35 percent clay, or it is moderately eroded and has a surface layer of silt loam or loam.

Excessive acidity.—The upper range of the soil pH is less than 4.5 within a depth of 40 inches.

Excessive alkalinity.—The lower range of the soil pH is more than 7.9 within a depth of 40 inches.

Restricted permeability.—Permeability is 0.06 inch per hour or less within a depth of 40 inches, and a seasonal high water table is within a depth of 18 inches.

Seasonal high water table.—The seasonal high water table is within a depth of 1.5 feet.

Salt content.—The component of the map unit has an electrical conductivity of more than 4 in the surface layer or more than 8 within a depth of 30 inches.

Short frost-free season.—The map unit has a growing season of less than 90 frost-free days.

Excessive slope.—The upper slope range of the component of the map unit is more than 25 percent.

Sodium content.—The sodium adsorption ratio of the component of the map unit is more than 13 within a depth of 30 inches.

Soil blowing.—The wind erodibility index multiplied by the selected high C factor for the survey area and then divided by the T factor is more than 8 for the component of the map unit.

Surface crusting.—The organic matter content of the surface layer is less than or equal to 3 percent, and the texture is silt loam or silty clay loam.

Surface compaction.—The component of the map unit has a surface layer of silt loam, silty clay loam, clay loam, clay, or silty clay.

Frost action.—The component of the map unit has a high potential for frost action.

Part of surface removed.—The surface layer of the component of the map unit is moderately eroded.

Most of surface removed.—The surface layer of the component of the map unit is severely eroded.

Subsidence of muck.—The organic matter content of the surface layer of the component of the map unit is greater than or equal to 20 percent.

Wind erosion.—The upper range of the slope is less than or equal to 25 percent, and the wind erodibility group is 1, 2, or 3.

Clodding.—The relative value of the total clay in the surface layer is greater than 32 percent.

Root-restrictive layer.—A fragipan or dense material is within a depth of 40 inches.

High clay content.—A layer within 40 inches of the surface has a clay content that averages between 40 and 60 percent.

Very high clay content.—A layer within 40 inches of the surface has a clay content that averages more than 60 percent.

Pasture and Hayland Management

Robert Coblentz, District Conservationist, Natural Resources Conservation Service, helped prepare this section.

Approximately 6.1 percent of Clinton County is presently used for pasture and hayland. About 2 percent is potential pasture and hayland that is idle and reverting to brush and young tree growth *(36)*. Most of the pasture and hayland acreage is in areas of 12 to 25 percent slopes. Soils in these areas are prone to erosion *(21)*.

Currently, pastures and hayland dominantly contain bluegrass and tall grasses. The tall grasses are tall fescue, orchardgrass, and timothy. Many pastures are unimproved and need renovation and brush control.

Some pastures and meadows show the result of abuse and neglect from overgrazing. These areas have weedy, low-producing forage. The soils in these fields are subject to increased erosion because of the sparse, short vegetative cover. These soils frequently have low levels of phosphorus and potassium. Good management can eventually restore these fields to much higher productivity.

Successful establishments of forage crops require the selection of quality seed of species and varieties adapted to the area and soils. Reseeding requires proper seedbed preparation, proper seeding methods and times, and use of recommended applications of lime and fertilizer. Forage renovation requires that existing grass and weeds are killed or suppressed before the desired species are reseeded. The object is to kill existing sod and leave it on or near the surface as dead mulch to reduce the erosion hazard. Nearly level pastures can be tilled. Vegetation on gently sloping and strongly sloping soils should be killed or suppressed, with tillage and seeding performed on the contour. A herbicide can be used with the trash mulch method to reduce the amount of tillage needed to kill existing vegetation.

The no-tillage method can be effective on some soils in Clinton County, except for those with drainage limitations or excessive slopes. Where no-tillage is used, vegetation should be suppressed or killed by grazing and herbicides.

April or August are usually the best months to make forage seedings. Forages can be seeded with a small grain crop, but frequently this results in reduced stands because of the plant competition for light, moisture, and nutrients.

Seeding mixtures should be selected on the basis of soil type and the desired management system. Legumes increase the nutrient value of forage and provide nitrogen for the growth of grasses. Alfalfa and red clover should be seeded on soils that have good drainage. Ladino clover and alsike clover are better adapted to the wetter soils.

Maintenance application of lime and fertilizer, according to soil tests, ensures good productivity and lengthens the life of the stand. Many pasture fields are becoming infested with multiflora rose. Multiflora rose reduces the productive ability of the pasture and limits the use of each field. Multiflora rose is a widespread problem in southwestern Ohio and, if not treated, can completely overtake a field. Weed control, by mowing,

clipping, and spraying, is important for continued high production. For alfalfa production, control of insects, such as alfalfa weevil and potato leafhopper, may be necessary. When pesticides are used, all label restrictions should be observed.

Harvesting hay, silage, or pasture at the proper stage of maturity provides the maximum quality of feed for animal production and forage health. The current "Agronomy Guide" can be used in planning the proper management of forage species on a specific farm.

Pasture and Hayland Interpretations

Soils are assigned to pasture and hayland groups according to their suitability for the production of forage. The soils in each group are similar enough to be suited to the same species of grasses or legumes, have similar limitations and hazards, require similar management, and have similar productivity levels and other responses to management.

Under good management, proper grazing is essential for the production of high-quality forage, stand survival, and erosion control. Proper grazing helps plants to maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation also are important management practices.

Yield estimates are often provided in animal unit months (AUM), or the amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 6 can be used by farmers, farm managers, conservationists, and extension agents in planning the use of soil for pasture and hay crops. Soils on slopes of more than 25 percent generally are not recommended for pasture or hayland.

The table lists the pasture and hayland suitability group symbol for each soil. Soils assigned the same suitability group symbol require the same general management and have about the same potential productivity. The pasture and hayland suitability groups organize the soils by soil characteristics and limitations.

Group A soils have few limitations for management and growth of climatically adapted plants. Soils assigned to group A-1 are deep and well drained or moderately well drained. They have a surface layer of loam, fine sandy loam, or silt loam. The available water capacity is moderate or high. Slope generally ranges from 0 to 18 percent.

Group A-2 soils are deep and well drained or moderately well drained. They have a surface layer of clay loam, fine sandy loam, loam, or silt loam. The available water capacity is medium. Slope generally ranges from 18 to 25 percent.

Group A-3 soils are deep and well drained or moderately well drained. The surface layer ranges from moderately coarse to fine. The available water capacity ranges from moderate to very high. Slope generally ranges from 25 to 40 percent.

Group A-5 soils are deep, well drained or moderately well drained, and on flood plains. They are frequently flooded or occasionally flooded. The surface layer is loam or silt loam. The available water capacity ranges from low to very high. Slope generally ranges from 0 to 3 percent.

Group A-6 soils are deep, well drained or moderately well drained, and subject to frost action. The surface layer ranges from moderately coarse to moderately fine. The available water capacity ranges from low to very high. Slope ranges from 0 to 18 percent.

Group B soils have limited growth and production due to doughtiness. Soils assigned to group B-1 are deep and well drained or moderately well drained. The surface layer ranges from coarse to moderately fine. The available water capacity is low or very low. The soils are sandy or skeletal in the subsoil. Slope ranges from 0 to 25 percent.

Group B-2 soils are deep and well drained. The surface layer ranges from coarse to

moderately fine. The available water capacity is low or very low. The soils are sandy or skeletal in the subsoil. Slope ranges from 25 to 40 percent.

Group B-3 soils are deep, excessively drained to somewhat poorly drained, and subject to brief flooding. The surface layer is cobbly silt loam or loam. The available water capacity ranges from very low to moderately low. The soils are sandy or skeletal in the substratum. Slope ranges from 0 to 6 percent.

Group C soils are normally wet due to high water tables or are saturated during the growing season. Soils assigned to group C-1 are deep and somewhat poorly drained or poorly drained. The surface layer is silt loam. The available water capacity is moderate or high. The soils normally respond well to subsurface drains. Slope ranges from 0 to 6 percent.

Group C-2 soils are deep and somewhat poorly drained or poorly drained. The surface layer is silt loam. The available water capacity is moderate or high. The effectiveness of subsurface drainage is usually limited by the permeability of the subsoil or landscape position. Slope ranges from 0 to 4 percent.

Group C-3 soils are deep, somewhat poorly drained or poorly drained, and on flood plains. They are frequently flooded or occasionally flooded. The surface layer is silt loam. The available water capacity ranges from moderate to very high. The effectiveness of subsurface drainage is limited by landscape position.

Group D soils are classified as organic (Histosols). Soils assigned to group D-1 are deep, are very poorly drained, and formed entirely or partially in organic material. The available water capacity is high or very high. Slope ranges from 0 to 2 percent.

Group E soils are shallow soils that restrict root growth to a depth of less than 20 inches. Soils assigned to group E-1 are well drained to poorly drained and have a restricted root zone less than 20 inches thick. The surface layer is moderately coarse to fine. The available water capacity is very low or low. Slope ranges from 0 to 25 percent.

Group E-2 soils are well drained and have a restricted root zone less than 20 inches thick. The surface layer is moderately coarse to fine. The available water capacity is low or very low. Slope ranges from 25 to 40 percent.

Group F soils have the root growth of climatically adapted plants restricted to a depth of less than 40 inches but more than 20 inches. Soils assigned to group F-1 are moderately deep and well drained or moderately well drained. The surface layer is channery silt loam or silt loam. The available water capacity is very low or low. Slope generally ranges from 3 to 25 percent.

Group F-2 soils are moderately deep and well drained or moderately well drained. The surface layer is silt loam. The available water capacity is low. Slope ranges from 25 to 40 percent.

Group F-3 soils are deep, are moderately well drained, and are moderately deep to a fragipan. The surface layer is silt loam. The available water capacity is moderate or low in the root zone. Slope ranges from 0 to 15 percent.

Group F-5 soils have a high clay content in the subsoil that restricts rooting depth. These soils are deep and moderately well drained or well drained. The surface layer is silty clay loam. The available water capacity is moderate. Slope ranges from 3 to 25 percent.

Group F-6 soils have high bulk density, high clay content, or other physical characteristics in the subsoil that restrict rooting depth. These soils are moderately well drained or well drained. The surface layer is medium or fine. The available water capacity is moderate or low in the root zone. Slope ranges from 25 to 40 percent.

Group F-7 soils have a high bulk density, high clay content, or other physical characteristics in the subsoil that restrict rooting depth. Natural drainage ranges from very poorly drained to somewhat poorly drained. The surface layer ranges from moderately coarse to fine. The available water capacity is moderate or low in the root zone. Slope ranges from 0 to 6 percent.

Group H soils are not adapted to pasture and hayland. Soils assigned to group H-1 are toxic or are on slopes of more than 40 percent.

The local office of the Natural Resources Conservation Service or of the Ohio State University Extension can provide information about forage yields other than those shown in table 6.

Crop Yield Index

Table 7 shows the crop yield index for Clinton County. The yield index reflects the yield potential of a soil in relation to other soils in the county. It is based on the most productive soil (Treaty soils receive a rating of 100 for corn and soybeans, and Birkbeck soils receive a rating of 100 for winter wheat). Other soils are ranked against this standard.

The yields used to calculate the index values are based on using good management practices.

To calculate estimated yields, use the yield index number as a percentage, and multiply it by the crop yield in the table header. For example, to calculate estimated corn yield for map unit FgB, multiply .80 by the corn yield in the header, which is 175. Thus, .80 x 175 = 140 bushels of corn estimated for map unit FgB.

To use this yield index in the future to calculate estimated yields, use current yield data.

Additional information on calculating estimated yields can be obtained from the local office of the Natural Resources Conservation Service or the Ohio State University Extension.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management *(35)*. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, woodland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, woodland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, woodland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class or subclass is shown in table 8. The capability classification of map units in this survey area is given in the section “Detailed Soil Map Units” and in table 28.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, woodland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 203,500 acres in the county, or about 77 percent of the total acreage in the county, meets the soils requirements for prime farmland as defined by the Natural Resources Conservation Service. Of this, about 131,000 acres, or nearly 64 percent of the prime farmland needs subsurface drainage. Some of this acreage could benefit from surface drainage as well. Clinton County consists of dominantly prime farmland soils; however, small areas of soils that do not meet the requirements are scattered throughout the county.

Most of the prime farmland in the county is used as cropland. A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. Areas of urbanization in and around cities and along interstate corridors account for the majority of prime farmland lost to agricultural uses. The loss of prime farmland to other uses puts pressure on marginal lands, which

generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 9. They are also indicated in table 28. These lists do not constitute a recommendation for a particular land use. On some soils included in the lists, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading “Detailed Soil Map Units.”

Unique Farmland

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil qualities, location, growing season, and moisture supply needed for the economic production of sustained high yields of a specific high-quality crop when treated and managed by acceptable farming methods. Examples of such crops are tree fruits, berries, and vegetables.

Unique farmland has an adequate supply of available moisture for the specific crops for which it is used because of stored moisture, precipitation, or irrigation and has a combination of soil qualities, growing season, temperature, humidity, air drainage, elevation, aspect, and other factors, such as nearness to markets, that favors the production of a specific food or fiber crop.

Lists of unique farmland are developed as needed in cooperation with conservation districts and others.

Additional Farmland of Statewide Importance

Some areas other than areas of prime farmland and unique farmland are of statewide importance in the production of food, feed, fiber, forage, and oilseed crops. The criteria used in defining and delineating these areas are determined by the appropriate State agency or agencies. Generally, additional farmland of statewide importance includes areas that nearly meet the criteria for prime farmland and that economically produce high yields of crops when treated and managed by acceptable farming methods. Some areas can produce as high a yield as areas of prime farmland if conditions are favorable. In some States additional farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

Additional Farmland of Local Importance

This land consists of areas that are of local importance in the production of food, feed, fiber, forage, and oilseed crops and are not identified as having national or statewide importance. Where appropriate, this land is identified by local agencies. It may include tracts of land that have been designated for agriculture by local ordinance.

Lists of this land are developed as needed in cooperation with conservation districts and others.

Hydric Soils

In this section, hydric soils are defined and described. The hydric soils in the survey area are listed in table 10. Table 28 also indicates the hydric soils in the survey area.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric

soils, and wetland hydrology *(8, 20, 28, 29)*. Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part *(13)*. These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established *(14)*. These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” *(34)* and “Keys to Soil Taxonomy” *(33)* and in the “Soil Survey Manual” *(38)*.

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in “Field Indicators of Hydric Soils in the United States” *(18)*.

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The map units in table 10 meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site *(18, 20)*.

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The map units in table 11, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

Woodland Management and Productivity

Chris Hodgson, Service Forester, Ohio Department of Natural Resources, Division of Forestry, helped prepare this section.

Before the arrival of the early settlers, Clinton County was almost entirely covered with a mixed hardwood forest. After almost 200 years of woodland clearing and development, only 17,000 acres, or 6 percent of the county, remain wooded *(9, 37)*.

The forest cover in the survey area is generally located along major creeks, intermittent streams, and drainageways. These riparian forests serve as buffers,

filtering sediment from adjoining crop fields and thus protecting water quality. The lower reaches of Todd Fork and Cowan Creek contain the largest block of contiguous forest cover due to the steep slopes adjacent to these watercourses. Small isolated woodlands are scattered throughout the county's eastern townships. They are typically located on poorly drained sites or in areas of farms that have poor accessibility *(9)*.

For silviculture discussions, however, three major type groups are recognized. The groups are (1) Mixed Hardwoods, (2) Elm-Ash-Maple, and (3) Eastern Red Cedar. They are three of the five major type groups found throughout the Central Region of the United States *(4, 5, 12)*.

The Mixed Hardwoods Type Group is often called "Mixed Mesophytic." The principal species are sugar maple, beech, elm, ash, and yellow-popular. Associated species include basswood, blackgum, and black walnut. Oak and hickory are also common *(4, 5, 12)*.

The Elm-Ash-Maple Type Group is often called "Bottomland Hardwoods." This group occurs along major streams in the county. Tree species within this group include American elm, red maple, silver maple, cottonwood, sycamore, and boxelder. Common associated species include pin oak, ash, willow, and, in some areas, walnut and mixed oak species.

The Eastern Red Cedar Type Group is of small economic importance in Clinton County. Red cedar occurs in either poor stands or mixed with hardwoods. Typically, this type occurs as scattered stands within the other timber type groups or on reverting farmlands. Sites which are severely eroded, slightly acidic, and infertile are well suited to the establishment of red cedar.

The variability of woodland composition and productivity is largely based on soil properties. The factors that influence tree growth are similar to those influencing the production of annual crops and pasture. The major difference is that tree roots extend deeper into the subsoil, utilizing areas between rock fragments. Soil depth, soil texture, fertility, slope, and past erosion are the major factors impacting tree growth and woodland development *(6, 31)*.

Site index is a measurement of the productivity of forest soils. It is based on the height growth which average dominant trees attain on different soil types at an arbitrary standard age *(7, 31)*. For the Central Hardwood region, the standard age is 50. For example, if a soil type has a site index of 80, the average dominant trees attain a height of 80 feet at age 50. The higher the site index, the more productive the soil.

In the past, timber stands were abused from indiscriminate logging practices. "High grading" was a common harvesting technique in which only the high-quality and valuable species were cut from the stand. Poorly formed trees, low-quality trees, hollow trees, and species of trees of non-merchantable value were left in the woods. These "culls" provided the seed for the next generation of trees, often proliferating their inferior genetic characteristics.

Woodlands were commonly pastured. This practice was and still is detrimental to forest health. Grazing compacts the soil, destroys herbaceous plants and tree seedlings, and degrades the commercial value of the sawtimber. As a result, the natural succession of plant communities is disrupted and trees become predisposed to insects and diseases.

Good timber management and silvicultural timber harvesting can be gained through the use of timber stand improvement (T.S.I.) practices, timber stand thinning, improvement cutting, and stand reproductive harvesting that uses even-aged or uneven-aged cutting techniques. The use of these practices depends on timber stand age, timber type, quality/condition of the individual trees, soil type, and aspect of the timber growing site.

Soil erosion is a concern when harvesting timber. Potential problem areas are skid trails, logging roads, and staging areas. Poorly designed logging roads and stream crossings contribute to erosion and the siltation of creeks. Best Management Practices

(BMPs) may include constructing water bars on steep logging roads and seeding down roads and landings upon completion of the harvest.

Recent trends indicate an increased interest in tree planting. White pine is the preferred conifer species since it is well suited to most soil types in Clinton County. Black walnut, red oak, and ash are being planted on the better sites. Reforestation projects generally involve small acreages and are targeted to fields that are either too small or inaccessible to farm. As the county continues to develop housing areas, tree planting is a plausible land use for tracts consisting of less than 10 acres.

All trees have specific site requirements. Planting trees off site impacts survival and growth rates.

Many of the soils in the county can produce more and better quality wood products than are currently being produced. A general knowledge of forest management practices and implementation of the methods enhance timber growth and quality and control forest competition.

Information on woodland management is available from the Ohio Department of Natural Resources, Division of Forestry; the Ohio State University Extension, Farm Services Agency; and the Natural Resources Conservation Service.

The tables in this section can help woodland owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of woodland management.

Woodland Management

In table 12, parts I through III, interpretive ratings are given for various aspects of woodland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified woodland management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified woodland management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for woodland management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available at the local office of the Natural Resources Conservation Service or on the Internet.

Ratings in the column *erosion hazard* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or

other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of woodland equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *harvest equipment operability* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for site preparation* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Woodland Productivity

In table 13, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average

height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the “National Forestry Manual,” which is available at the local office of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Windbreaks and Environmental Plantings

Farm and homestead windbreaks are rows of trees or shrubs established adjacent to farm buildings, feedlots, and homes. These windbreaks are usually planted perpendicular to the prevailing winter wind. Planting multiple rows of various species provides the best protection from winds and results in more varied wildlife habitat. Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 14 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in table 14 are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service; the Ohio Department of Natural Resources, Division of Forestry; or the Ohio State University Extension or from a commercial nursery.

Landscape Plantings

Information about the relationship between soils and the selection of landscaping materials helps the user save money by preventing plant loss. Since landscaping design is an individual preference, and the list of landscaping materials increases yearly, only four major soil characteristics that most affect plant selection are discussed. They are texture, drainage, available water capacity (AWC), and the reaction of the subsoil. This information can be found in the individual map unit descriptions or series descriptions. The land user can consult a horticulturist and, with the aid of the woodland tables in this survey, determine the plants best adapted to his or her needs.

Texture refers to the percentage of sand, silt, and clay present in the subsoil. Generally, soils that have less than 40 percent clay and a low content of rock fragments or gravel provide the best environment for root development.

Drainage is primarily the result of the soil position on the landscape. Much of the rain water and snow melt runs off the higher or more sloping, better drained areas onto the lower and/or flatter areas. A well drained soil is typically characterized by yellowish or brown colors and few or no gray colors. The wetter the soil, the larger the percentage of gray colors; a poorly drained or very poorly drained soil is dominantly gray. Subsurface drainage can help lower the water table, but installation may not be possible and

maintenance can be costly. On soils that have a shallow water table, plants likely to grow well are wetland plants.

Available water capacity is the capacity of the soil to hold water and make it available for use by most plants. AWC is measured to a depth of 60 inches or to the depth of a root-limiting layer. A root-limiting layer is bedrock, dense glacial till, sand and gravel, or a fragipan. Generally, the shallower the root-limiting layer, the lower the AWC. For soils that have a low or moderately low AWC, plants that tolerate droughty conditions should be selected.

The acidity or alkalinity (pH) of the subsoil is another major characteristic affecting plant selection. While the pH of the surface layer can be modified relatively easily by the addition of lime or sulfur, it is almost impossible to alter the pH of the subsoil. While many plants grow well in a wide range of pH, some plants, such as azaleas and rhododendrons, require an acid subsoil.

Recreational Development

Clinton County has about 11,600 acres of State and Federal lands for recreational purposes.

There are two State parks in the county—Cowan Lake and Caesar Creek. Cowan Lake State Park has a 700-acre lake and 1,076 acres of land. Caesar Creek State Park has a 2,830-acre lake and 7,000 acres of land. Part of the land is a State Park, and part is a State wildlife area. Both parks offer camping, boating, fishing, hunting, hiking, horseback riding, and many other recreational activities. There are also several private camping areas within the county.

The city of Wilmington and many of the villages and schools in the county have parks equipped with athletic fields, playground equipment, tennis courts, and swimming pools. The county also has two golf courses.

Additional information about the recreational areas in the county can be obtained from the Clinton County Regional Planning Commission and the Wilmington Chamber of Commerce.

The soils of the survey area are rated in table 15, parts I and II, according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the table are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season

when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in the table can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a fragipan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a fragipan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a fragipan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a fragipan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a fragipan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The

properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

Richard Fife, Wildlife Officer, Ohio Department of Natural Resources, Division of Wildlife, helped prepare this section.

Clinton County has a wide variety of wildlife. Some of the more common birds that inhabit the county are bobwhite quail, pheasant, mourning dove, common crow, pileated woodpecker, red-tailed hawk, owls, meadowlark, and many other species of songbirds. Mammalian wildlife species include cottontail rabbit, gray squirrel, fox squirrel, gray fox, red fox, whitetail deer, raccoon, woodchuck, and coyotes.

The diverse species of wildlife inhabit a wide variety of wildlife habitats, including openland, woodland, and areas along streams and lakes.

Wetland wildlife habitat can be developed in undrained depressions on the till plains and in old stream meanders on flood plains. Ponds and lakes can also be used as habitat for wetland wildlife. Special plantings help to attract waterfowl. Canadian geese, wood ducks, and mallard are some of the more common species of waterfowl that nest in the county in the spring.

Upland wildlife habitat is made up of both openland and woodland. The major soils in the areas of upland wildlife habitat include Fincastle and Xenia soils on the till plains. Including grasses and legumes in the cropping sequence, applying a system of conservation tillage, constructing ponds, and planting trees and shrubs can improve the habitat for openland wildlife. Applying measures that improve timber stands, excluding livestock from wooded areas, and planting trees and shrubs can improve the habitat for woodland wildlife.

The major riparian areas in the county are along the East Fork of the Little Miami River, Rattlesnake Creek, Anderson Fork, and Todd Run as well as Caesar Creek Reservoir and Cowan Lake. The dominant soils in these areas include Sligo, Sloan, and Stringley soils. Stabilizing streambanks, providing nest boxes for wood ducks, and planting trees and shrubs can improve the riparian habitat.

Additional information on the development of wildlife habitat is available from the Ohio Department of Natural Resources, Division of Wildlife, and the Natural Resources Conservation Service.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants *(1)*.

In table 16, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be

created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, soybeans, rye, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, bromegrass, clover, timothy, orchardgrass, crown vetch, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, indiangrass, poverty grass, lambsquarters, wildrye, and sensitive fern.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, raspberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are American plum, redosier dogwood, serviceberry, viburnum, and crabapple.

Coniferous plants furnish cover, browse, and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, hemlock, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites (fig. 12). Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, slope, and surface stoniness. Examples of wetland plants are smartweed, bulrushes, arrowhead, cattails, waterplantain, wild millet, swamp milkweed, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to

Figure 12.—Clinton County has shallow water areas that can provide excellent wildlife habitat.

these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose

specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Construction Materials

Table 17, parts I and II, give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 17, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good, fair,* or *poor* as potential sources of reclamation material, roadfill, and topsoil. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate

the degree to which the features limit the soils as sources of reclamation material, roadfill, or topsoil. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a fragipan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance (fig. 13). Table 18, parts I and II, show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping. .

The ratings in the table are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the

Figure 13.—Very poorly drained soils, such as Kokomo and Treaty soils, are poorly suited to homesites with basements.

specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a fragipan, hardness of bedrock or a fragipan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and

on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a fragipan, hardness of bedrock or a fragipan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a fragipan, hardness of bedrock or a fragipan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a fragipan, hardness of bedrock or a fragipan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction, depth to a water table, ponding, depth to bedrock or a fragipan, the available water capacity in the upper 40 inches, and the content of calcium carbonate materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Table 19, parts I and II, show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate

gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a fragipan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a fragipan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a fragipan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and fragipans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a fragipan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a fragipan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, and soil reaction. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when

wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a fragipan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured fragipan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a fragipan, reaction, and content of lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a fragipan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 20 shows the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and

nitrogenous material. The content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a fragipan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of

sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a fragipan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a fragipan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a fragipan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Water Management

Table 21, parts I and II, give information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; aquifer-fed excavated ponds; grassed waterways; terraces and diversions; and drainage. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other

Figure 14.—The installation of tile improves drainage in somewhat poorly drained and poorly drained soils.

permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5

feet of suitable material, a high content of stones or boulders, or a high content of organic matter. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table and the permeability of the aquifer. Depth to bedrock and the content of large stones affect the ease of excavation.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or a fragipan affect the construction of grassed waterways. A hazard of water erosion, low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or a fragipan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, a fragipan, or other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or a fragipan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone. Availability of drainage outlets is not considered in the ratings (fig. 14).

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics. The test results are at the Ohio State University, School of Natural Resources, Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, Columbus, Ohio; and the Natural Resources Conservation Service, State Office, Columbus, Ohio.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 22 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 15). “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(3)* and the system adopted by the American Association of State Highway and Transportation Officials *(2)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

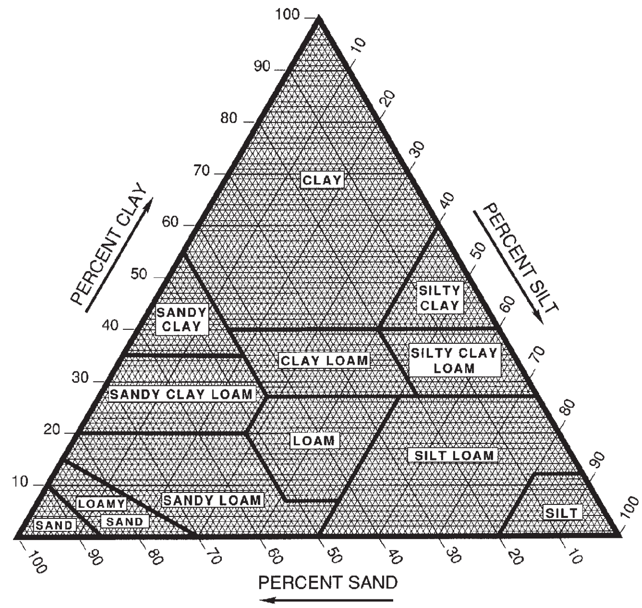

Figure 15.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Physical Properties

Table 23 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Clay as a soil separate consists of mineral soil particles that are less than 0.002

millimeter in diameter. In table 23, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates in the table indicate the rate of water movement, in inches per hour (in/hr), when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are low, a change of 3 percent; moderate, 3 to 6 percent; high, 6 to 9 percent; and very high, more than 9 percent.

Erosion factors are shown in table 23 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of

soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

Chemical Properties

Table 24 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 24, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils

having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Water Features

Table 25 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. Table 25 indicates, by month, depth to the top *(upper limit)* and base *(lower limit)* of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 25 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent

to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 26 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness of the restrictive layer, which significantly affects the ease of excavation.

Depth to top is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of

uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as low, moderate, or high, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as low, moderate, or high. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Physical and Chemical Analyses of Selected Soils

Many of the soils in Clinton County were sampled by the Soil Characterization Laboratory, School of Natural Resources, the Ohio State University, Columbus, Ohio. The physical and chemical data obtained from the samples include particle-size distribution, reaction, organic matter content, calcium carbonate content, and extractable cations.

These data were used in classifying and correlating soils and in evaluating their behavior under various land uses. Seventeen pedons were selected as representative of the respective series and are described in the section titled “Soil Series and Their Morphology.” These series and their laboratory identification numbers are: Lumberton (CT-79), Treaty (CT-80), Secondcreek (CT-81), Jonesboro (CT-82), Westboro (CT-83), Coblen (CT-84), Libre (CT-86), Taggart (CT-87), Sligo (CT-88), Fincastle (CT-90), Xenia (CT-91), Morrisville (CT-92), Stringley (CT-93), Nicely (CT-94), Crouse (CT-95), Reesville (CT-96), and Crouse (CT-97).

In addition to the data from Clinton County, laboratory data are available from nearby or adjacent counties that have many of the same soils. These datasets and the data from Clinton County are on file at the School of Natural Resources, the Ohio State University, Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, Columbus, Ohio; and the Natural Resources Conservation Service, State Office, Columbus, Ohio.

Engineering Index Test Data

Engineering index test data are available for several pedons from Clinton County. Additional engineering index test data are also available from several nearby counties that have many of the same soils as Clinton County. These soils were analyzed for engineering properties by the Ohio Department of Transportation, Division of Highways, Bureau of Testing, Soils Foundation Section. The available test data are on file at the MLRA Project Office, Wilmington, Ohio; the Ohio State University, School of Natural Resources, Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, Columbus, Ohio; and the Natural Resources Conservation Service, State Office, Columbus, Ohio.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(33, 34)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 27 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in

the survey area is described. Pedon descriptions published in this survey come from Clinton County or adjacent counties. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(38)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(34)* and in “Keys to Soil Taxonomy” *(33)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Birkbeck Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loess and the underlying Wisconsinan till
Landform: Flats and slight rises on the Wisconsinan till plain
Position on the landform: Summits
Slope range: 0 to 6 percent
Adjacent soils: Fincastle, Reesville, and Treaty
Taxonomic class: Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs

Typical Pedon

Birkbeck silt loam, 2 to 6 percent slopes; Clinton County, Ohio; about 7 miles northeast of Wilmington, in Wilson Township, about 1,860 feet northwest of the intersection of Prairie Road and Sabina Road, along Sabina Road, about 690 feet east; USGS Bowersville topographic quadrangle; lat. 39 degrees 30 minutes 42 seconds N. and long. 83 degrees 44 minutes 15 seconds W.; NAD 27:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure; friable; common fine and medium roots; moderately acid; clear smooth boundary.

Bt1—10 to 18 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; common fine and few medium roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt2—18 to 25 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; common fine and few medium roots between peds; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; clear wavy boundary.

Bt3—25 to 38 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots between peds; common distinct yellowish brown (10YR 5/4) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common fine faint yellowish brown (10YR 5/6) masses of iron accumulation throughout; common fine prominent black (10YR 2/1) masses of iron and manganese accumulation throughout; moderately acid; clear wavy boundary.

Bt4—38 to 52 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots between peds; common distinct brown (10YR 5/3) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint strong brown (7.5YR 5/6) and common fine faint yellowish brown (10YR 5/6) masses of iron accumulation throughout; common fine prominent black (10YR 2/1) masses of iron and manganese accumulation throughout; neutral; clear smooth boundary.

2Bt5—52 to 56 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few fine roots between peds; common faint yellowish brown (10YR 5/4) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint strong brown (7.5YR 5/6) masses of iron accumulation throughout; common fine distinct pale brown (10YR 6/3) masses of calcium carbonate accumulation throughout; 1 percent irregular limestone nodules; 3 percent rounded igneous pebbles; slightly effervescent; slightly alkaline; clear smooth boundary.

2BC—56 to 65 inches; yellowish brown (10YR 5/4) clay loam that has 0.5- to 1-inch-thick strata of brown (10YR 4/3) sand; weak coarse subangular blocky structure parting to weak thin platy; firm; few faint yellowish brown (10YR 5/4) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; common fine faint pale brown (10YR 6/3) masses of calcium carbonate accumulation throughout; 2 percent irregular limestone nodules; 5 percent rounded igneous pebbles; strongly effervescent; moderately alkaline; clear wavy boundary.

2C—65 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive; firm; common medium distinct light gray (10YR 6/1) iron depletions surrounded by common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; common fine faint pale brown (10YR 6/3) masses of calcium carbonate accumulation throughout; 2 percent irregular limestone nodules; 10 percent rounded igneous pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 70 inches
Depth to bedrock: More than 80 inches
Depth to carbonates: 40 to 70 inches
Thickness of the loess mantle: 40 to 60 inches
Content of rock fragments: 2 to 10 percent in the 2Bt or 2BC horizon; 2 to 14 percent in the 2C horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Texture—silt loam

E horizon (if it occurs):
Color—hue of 10YR, value of 5, and chroma of 3 or 4
Texture—silt loam

Bt horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—silt loam or silty clay loam

2Bt horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 3 to 6
Texture—silt loam, loam, silty clay loam, or clay loam

2BC horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 6
Texture—clay loam, loam, silty clay loam, or silt loam

2C horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4
Texture—clay loam, loam, silty clay loam, or silt loam

Blanchester Series

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Loess and the underlying Illinoian till
Landform: Depressions and flats on the Illinoian till plain
Slope range: 0 to 1 percent
Adjacent soils: Clermont, Jonesboro, Rossmoyne, Schaffer, and Westboro
Taxonomic class: Fine-silty, mixed, superactive, mesic Mollic Endoaqualfs

Typical Pedon

Blanchester silty clay loam, 0 to 1 percent slopes; Clinton County, Ohio; about 3.25 miles north-northeast of Blanchester, in Marion Township, about 1,920 feet northwest of the intersection of Ohio Highway 133 and Ohio Highway 730, along Ohio Highway 133, about 600 feet west; USGS Blanchester topographic quadrangle; lat. 39 degrees 20 minutes 14 seconds N. and long. 83 degrees 58 minutes 06 seconds W.; NAD 27:

Ap—0 to 9 inches; very dark grayish brown (2.5Y 3/2) silty clay loam, gray (10YR 5/1) dry; moderate medium and fine subangular blocky structure; friable; many fine roots; common fine prominent strong brown (7.5YR 5/8) iron concretions throughout; few pebbles; slightly acid; abrupt smooth boundary.

Btg1—9 to 16 inches; dark gray (2.5Y 4/1) silty clay loam; moderate fine subangular blocky structure; firm; common fine roots; common distinct dark gray (10YR 4/1) clay films on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium prominent strong brown (7.5YR 5/8) iron concretions throughout; few pebbles; neutral; gradual wavy boundary.

Btg2—16 to 37 inches; dark gray (10YR 4/1) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; common faint dark gray (10YR 4/1) and common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many medium prominent strong brown (7.5YR 5/8) iron concretions throughout; few pebbles; neutral; gradual wavy boundary.

2Bt1—37 to 59 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few roots; many prominent gray (10YR 5/1) and few prominent dark gray (10YR 4/1) clay films on faces of peds; many coarse distinct gray (10YR 5/1) and few medium distinct dark gray (10YR 4/1) iron depletions in the matrix; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; 5 percent pebbles; neutral; gradual wavy boundary.

2Bt2—59 to 80 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; firm; many prominent gray (10YR 5/1) clay films on faces of peds; many medium distinct gray (10YR 5/1) iron depletions in the matrix; 5 percent pebbles; neutral.

Range in Characteristics

Thickness of the solum: More than 80 inches
Depth to carbonates: More than 80 inches
Thickness of the loess mantle: 18 to 40 inches
Content of rock fragments: 0 to 1 percent in the Ap and Btg horizons; 2 to 10 percent in the 2Bt horizon

Ap horizon:
Color—hue of 10YR or 2.5Y, value of 3, and chroma of 1 or 2
Texture—silty clay loam

Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2
Texture—silt loam or silty clay loam

2Bt horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4
Texture—silty clay loam or clay loam

Casco Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Parent material: Loamy alluvium underlain by calcareous stratified sandy and loamy Wisconsinan outwash
Landform: Outwash terraces
Position on the landform: Risers and backslopes
Slope range: 12 to 50 percent
Adjacent soils: Fox and Ockley
Taxonomic class: Fine-loamy over sandy or sandy skeletal, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Casco silt loam, 18 to 50 percent slopes, eroded; Clinton County, Ohio; about 3.1 miles northeast of Clarksville, in Adams Township, about 2,700 feet northeast of the intersection of Pyle Road and Clarksville Road, along Clarksville Road, about 250 feet east; USGS Clarksville topographic quadrangle; lat. 39 degrees 25 minutes 46 seconds N. and long. 83 degrees 56 minutes 08 seconds W.; NAD 27:

Ap—0 to 5 inches; brown (10YR 4/3) silt loam, brown (10YR 5/3) dry; weak fine granular structure; friable; many fine roots; many distinct dark brown (10YR 3/3) organic coatings on faces of peds; 5 percent gravel; neutral; clear smooth boundary.
Bt—5 to 12 inches; brown (10YR 4/3) gravelly clay loam; moderate medium subangular blocky structure; friable; common fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; common distinct dark brown (10YR 3/3) organic coatings on faces of peds; common distinct light yellowish brown (2.5Y 6/4) masses of calcium carbonate accumulation throughout; 15 percent gravel; slightly effervescent; slightly alkaline; clear wavy boundary.
BC—12 to 21 inches; dark yellowish brown (10YR 4/4) gravelly clay loam; weak medium subangular blocky structure; friable; few fine roots; common distinct brown (10YR 4/3) clay films on faces of peds; common distinct light gray (10YR 7/2) masses of calcium carbonate accumulation throughout; 30 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.
2C—21 to 80 inches; dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) extremely gravelly loamy coarse sand; single grain; loose; 60 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 10 to 23 inches
Depth to carbonates: 10 to 20 inches
Content of rock fragments: 0 to 14 percent in the Ap horizon; 5 to 35 percent in the Bt horizon; 10 to 35 percent in the BC horizon; 10 to 70 percent in the 2C horizon

Ap horizon:
Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3
Texture—silt loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 or 4
Texture—clay loam, loam, or sandy clay loam or their gravelly analogues

BC horizon:
Color—hue of 10YR and value and chroma of 4
Texture—clay loam or gravelly clay loam

2C horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 3 or 4
Texture—stratified layers of loamy coarse sand, sandy loam, or loamy sand or their gravelly to extremely gravelly analogues

Celina Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: A thin layer of loess and the underlying Wisconsinan till
Landform: Slight rises and flats on the Wisconsinan till plain
Position on the landform: Summits and shoulders
Slope range: 0 to 6 percent
Adjacent soils: Crosby, Losantville, Miamian, and Kokomo
Taxonomic class: Fine, mixed, active, mesic Aquic Hapludalfs

Typical Pedon

Celina silt loam in an area of Celina-Losantville silt loams, 2 to 6 percent slopes; Clinton County, Ohio; about 1.5 miles southeast of Sabina, in Richland Township, about 2,850 feet southeast of the intersection of Ohio Highway 729 and Darbyshire Road, along Ohio Highway 729, about 800 feet east; USGS Memphis topographic quadrangle; lat. 39 degrees 28 minutes 29 seconds N. and long. 83 degrees 37 minutes 27 seconds W.; NAD 27:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; matrix has 10 percent mixing of yellowish brown (10YR 5/4) B horizon material; weak coarse subangular blocky structure; friable; few fine roots; few pebbles; neutral; gradual smooth boundary.

BE—7 to 12 inches; brown (10YR 4/3) silt loam; matrix has 10 percent mixing of yellowish brown (10YR 5/4) B horizon material; moderate medium subangular blocky structure; friable; few fine roots; few pebbles; neutral; abrupt smooth boundary.

2Bt1—12 to 17 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; friable; few fine roots; few distinct brown (10YR 4/3) clay films on faces of peds; few faint brown (10YR 5/3) clay depletions on faces of peds; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; few pebbles; slightly acid; clear wavy boundary.

2Bt2—17 to 24 inches; dark yellowish brown (10YR 4/4) clay; moderate medium subangular blocky structure; firm; few fine roots; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common medium distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; few pebbles; neutral; clear wavy boundary.

2BC—24 to 28 inches; yellowish brown (10YR 5/4) clay loam; weak coarse subangular blocky structure; firm; common faint yellowish brown (10YR 5/4) clay films on faces of peds; common medium distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation

throughout; few fine distinct light gray (10YR 7/2) masses of calcium carbonate accumulation throughout; 10 percent pebbles; slightly effervescent; slightly alkaline; clear smooth boundary.

2Cd1—28 to 36 inches; yellowish brown (10YR 5/4) loam; massive with widely spaced vertical fractures; very firm; common medium distinct grayish brown (2.5Y 5/2) iron depletions on vertical fractures; common fine distinct light gray (10YR 7/2) masses of calcium carbonate accumulation on vertical fractures; few medium irregular calcium carbonate nodules throughout; 10 percent pebbles; strongly effervescent; slightly alkaline; clear irregular boundary.

2Cd2—36 to 80 inches; dark yellowish brown (10YR 4/4) loam; massive; very firm; common fine distinct light gray (10YR 7/2) masses of calcium carbonate accumulation throughout; 10 percent pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: More than 80 inches
Depth to carbonates: 18 to 40 inches
Thickness of the loess mantle: 8 to 18 inches
Content of rock fragments: 0 to 2 percent in the Ap horizon; 2 to 14 percent in the 2Bt horizon; 0 to 14 percent in the 2Cd horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Texture—silt loam

BE horizon (if it occurs):
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—silt loam or silty clay loam

2Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—silty clay loam, silty clay, or clay

2BC horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—clay loam or loam

2Cd horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—loam, silt loam, or clay loam

Clermont Series

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Loess and the underlying pedisediment and Illinoian till
Landform: Depressions and flats on the Illinoian till plain
Slope range: 0 to 1 percent
Adjacent soils: Blanchester, Jonesboro, Rossmoyne, Schaffer, and Westboro
Taxonomic class: Fine-silty, mixed, superactive, mesic Typic Glossaqualfs

Typical Pedon

Clermont silt loam, 0 to 1 percent slopes; Clinton County, Ohio; about 1.75 miles southwest of Martinsville, in Clark Township, about 2,800 feet northeast of the intersection of Oak Grove Road and Mud Switch Road, along Mud Switch Road, 1,900

feet north; USGS Martinsville topographic quadrangle; lat. 39 degrees 17 minutes 55 seconds N. and long. 83 degrees 49 minutes 30 seconds W.; NAD 27:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light gray (10YR 7/2) dry; weak medium subangular blocky structure; friable; many fine and medium roots; common fine distinct dark yellowish brown (10YR 4/4) masses of iron accumulation throughout; few fine distinct dark yellowish brown (10YR 4/4) iron nodules throughout; neutral; abrupt wavy boundary.

Eg—9 to 14 inches; light brownish gray (2.5Y 6/2) silt loam; weak medium subangular blocky structure; friable; common fine roots; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine prominent black (10YR 2/1) manganese concretions throughout; very strongly acid; clear irregular boundary.

E/B—14 to 22 inches; light brownish gray (2.5Y 6/2) silt loam (E part) and silty clay loam (Bt part); weak medium prismatic structure parting to moderate medium subangular blocky; friable; common fine roots; many tongues of light brownish gray (2.5Y 6/2) and gray (10YR 6/1) silt loam (E part) that are widest in the lower part of the horizon; few faint light brownish gray (2.5Y 6/2) clay films on faces of peds in Bt part; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium prominent black (10YR 2/1) manganese concretions throughout; few pebbles in the lower part of horizon; very strongly acid; clear wavy boundary.

2Btg/E—22 to 36 inches; light brownish gray (2.5Y 6/2) silty clay loam (Btg part); moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; many tongues of light brownish gray (2.5Y 6/2) and gray (10YR 6/1) silt loam (E part); many distinct light brownish gray (2.5Y 6/2) clay films on faces of peds in Btg part; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium prominent black (10YR 2/1) manganese concretions throughout; few pebbles; very strongly acid; clear wavy boundary.

2Btg1—36 to 56 inches; gray (10YR 5/1) silty clay loam that has tongues of light brownish gray (2.5Y 6/2) silt loam in the upper part of horizon; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many distinct gray (10YR 5/1) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation throughout; common medium distinct black (10YR 2/1) manganese concretions throughout; few pebbles; neutral; clear wavy boundary.

3Btg2—56 to 71 inches; gray (10YR 5/1) clay loam; moderate medium subangular blocky structure; firm; common prominent grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix (making up 15 to 20 percent); common coarse and medium distinct black (10YR 2/1) manganese concretions throughout; 5 percent pebbles; neutral; clear wavy boundary.

3Bt—71 to 80 inches; strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; firm; common distinct gray (10YR 5/1) clay films on faces of peds; many medium prominent gray (10YR 5/1) iron depletions in the matrix; common fine prominent black (10YR 2/1) masses of manganese accumulation on faces of peds; 5 percent pebbles; neutral.

Range in Characteristics

Thickness of the solum: More than 80 inches
Depth to bedrock: More than 80 inches
Depth to carbonates: More than 80 inches

Thickness of the loess mantle: 20 to 42 inches
Content of rock fragments: 2 to 10 percent in the 2Btg horizon; 2 to 10 percent in the 3Bt horizon

Ap horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 or 2
Texture—silt loam

Eg horizon:
Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2
Texture—silt loam

E/B (or B/E) horizon:
Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2
Texture—silt loam or silty clay loam

2Btg/E horizon:
Color—hue of 2.5Y, value of 6, and chroma of 2
Texture—silty clay loam

2Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2
Texture—silty clay loam or clay loam

3Btg or 3Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 1 to 6
Texture—clay loam, clay, or silty clay

Coblen Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loamy alluvium
Landform: Slight rises on flood plains
Slope range: 0 to 2 percent
Adjacent soils: Miamian, Sligo, Sloan, Stringley, and Thrifton
Taxonomic class: Coarse-loamy, mixed, active, mesic Fluvaquentic Hapludolls

Typical Pedon

Coblen loam, 0 to 2 percent slopes, rarely flooded; Clinton County, Ohio; about 1 mile west of Lumberton, in Liberty Township, about 1,800 feet west of the intersection of McKay Road and New Burlington Road, along New Burlington Road, about 810 feet south; USGS Port William topographic quadrangle; lat. 39 degrees 33 minutes 24 seconds N. and long. 83 degrees 52 minutes 10 seconds W.; NAD 27:

Ap—0 to 11 inches; very dark brown (10YR 2/2) loam, dark gray (10YR 4/1) dry; moderate fine and medium granular structure; friable; many fine and medium roots; 1 percent gravel; slightly alkaline; abrupt smooth boundary.

A—11 to 17 inches; black (10YR 2/1) loam, very dark gray (10YR 3/1) dry; moderate medium and fine subangular blocky structure; friable; many fine and medium roots; few fine prominent strong brown (7.5YR 5/6) iron concretions throughout; 3 percent gravel; slightly alkaline; clear wavy boundary.

Bw1—17 to 21 inches; brown (10YR 4/3) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation on faces of peds; few fine

prominent strong brown (7.5YR 5/6) iron concretions throughout; many distinct black (10YR 2/1) and very dark gray (10YR 3/1) organic coatings on faces of peds and in root channels; many black (10YR 2/1) krotovina; 5 percent gravel; slightly alkaline; gradual wavy boundary.

Bw2—21 to 31 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine and medium subangular blocky structure; friable; common fine and medium roots; common medium distinct dark grayish brown (10YR 4/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation on faces of peds; few fine distinct strong brown (7.5YR 5/6) iron concretions throughout; common distinct very dark grayish brown (10YR 3/2) organic coatings in root channels; common black (10YR 2/1) krotovina; 3 percent gravel; slightly alkaline; clear wavy boundary.

Bw3—31 to 41 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine distinct strong brown (7.5YR 5/6) iron concretions throughout; few distinct very dark grayish brown (10YR 3/2) organic coatings in root channels; few black (10YR 2/1) krotovina; 3 percent gravel; moderately alkaline; abrupt wavy boundary.

Bkg—41 to 49 inches; dark gray (10YR 4/1) gravelly sandy loam; weak coarse subangular blocky structure; friable; few fine roots; many medium faint gray (10YR 5/1) iron depletions in the matrix; many medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in root channels; many medium distinct light gray (10YR 7/1) masses of calcium carbonate accumulation throughout; 20 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

Cg—49 to 71 inches; grayish brown (10YR 5/2) gravelly sandy loam; massive; very friable; few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation throughout; 30 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

C—71 to 80 inches; yellowish brown (10YR 5/4) extremely gravelly sandy loam; single grain; loose; 80 percent gravel; violently effervescent; strongly alkaline.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Thickness of the mollic epipedon: 10 to 20 inches
Depth to carbonates: 30 to 60 inches
Content of rock fragments: 0 to 5 percent in the Ap horizon; 2 to 5 percent in the Bw horizon; 15 to 85 percent in the Bkg and C horizons

Ap or A horizon:
Color—hue of 10YR, value of 2 or 3 (3 to 5 dry), and chroma of 1 or 2
Texture—loam

Bw horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—fine sandy loam, sandy loam, or silt loam

Bkg horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 1 to 4
Texture—gravelly to extremely gravelly analogues of sandy loam or loamy sand

Cg or C horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 6
Texture—gravelly to extremely gravelly analogues of sandy loam, loamy sand, or loam

Corwin Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: A thin layer of loess and the underlying Wisconsinan till
Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits
Slope range: 2 to 6 percent
Adjacent soils: Crosby, Kokomo, Odell, and Treaty
Taxonomic class: Fine-loamy, mixed, active, mesic Oxyaquic Argiudolls

Typical Pedon

Corwin silt loam, 2 to 6 percent slopes; Fayette County, Ohio; about 6.5 miles west of Washington Court House, in Jasper Township, about 1,740 feet south of the intersection of Miami Trace Road and Burnett-Perrill Road, along Miami Trace Road, about 1,500 feet west; USGS Milledgeville topographic quadrangle; lat. 39 degrees 32 minutes 08 seconds N. and long. 83 degrees 34 minutes 15 seconds W.; NAD 27:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry and dark brown (10YR 3/3) rubbed; weak fine granular structure; friable; slightly acid; abrupt smooth boundary.

A—7 to 12 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry and dark brown (10YR 3/3) rubbed; moderate medium subangular blocky structure; friable; moderately acid; clear smooth boundary.

Bt1—12 to 19 inches; brown (10YR 4/3) clay loam; moderate fine subangular blocky structure; firm; common prominent very dark grayish brown (10YR 3/2) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; 3 percent fine pebbles; slightly acid; gradual smooth boundary.

Bt2—19 to 26 inches; brown (10YR 4/3) clay loam; weak coarse subangular blocky structure; firm; common prominent very dark grayish brown (10YR 3/2) clay films on vertical faces of peds; common faint very dark grayish brown (10YR 3/2) clay films on horizontal faces of peds; few fine faint yellowish brown (10YR 5/4) masses of iron accumulation throughout; neutral; abrupt wavy boundary.

BC—26 to 34 inches; brown (10YR 5/3) clay loam; weak coarse subangular blocky structure; friable; common distinct dark grayish brown (10YR 4/2) and very dark grayish brown (10YR 3/2) clay films on vertical faces of peds; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine faint yellowish brown (10YR 5/4) masses of iron accumulation throughout; 5 percent fine pebbles and soft limestone; slightly effervescent; slightly alkaline; gradual wavy boundary.

C—34 to 42 inches; yellowish brown (10YR 5/4) loam; massive; friable; strongly effervescent; slightly alkaline and moderately alkaline; gradual wavy boundary.

Cd—42 to 60 inches; brown (10YR 5/3) loam; massive; firm; common fine faint yellowish brown (10YR 5/4) and common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common fine distinct gray (10YR 6/1) masses of calcium carbonate accumulation throughout; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 24 to 40 inches
Thickness of the mollic epipedon: 10 to 14 inches
Depth to carbonates: 20 to 30 inches
Thickness of the loess mantle: 0 to 18 inches

Content of rock fragments: 0 to 2 percent in the Ap horizon; 2 to 10 percent in the Bt horizon; 5 to 10 percent in the BC horizon; 5 to 10 percent in the C and Cd horizons

Ap or A horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 2
Texture—silt loam

Bt horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—silty clay loam, silty clay, or clay loam

BC horizon:
Color—hue of 10YR, value of 5, and chroma of 3 or 4
Texture—clay loam

C and Cd horizons:
Color—hue of 10YR, value of 5, and chroma of 3 or 4
Texture—loam or silt loam

Crosby Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Parent material: A thin layer of loess and the underlying Wisconsinan till
Landform: Slight rises and flats on the Wisconsinan till plain
Position on the landform: Summits
Slope range: 0 to 4 percent
Adjacent soils: Celina, Kokomo, and Miamian
Taxonomic class: Fine, mixed, active, mesic Aeric Epiaqualfs

Typical Pedon

Crosby silt loam in an area of Crosby-Celina silt loams, 2 to 4 percent slopes; Clinton County, Ohio; about 0.5 mile northeast of Lees Creek, in Wayne Township, about 3,300 feet northeast of the junction of Ohio Highway 729 and Cox Road, along Ohio Highway 729, about 100 feet west; USGS Sabina topographic quadrangle; lat. 39 degrees 25 minutes 37 seconds N. and long. 83 degrees 38 minutes 25 seconds W.; NAD 27:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; matrix has 5 percent mixing of yellowish brown (10YR 5/6) Bt horizon material; weak fine subangular blocky structure; friable; common fine roots; few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation throughout; common faint black (10YR 2/1) manganese concretions throughout; neutral; clear smooth boundary.

2Bt1—8 to 13 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium and fine subangular blocky structure; firm; common fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct brown (7.5YR 4/4) masses of iron accumulation throughout; few prominent dark grayish brown (10YR 4/2) organic coatings in root channels; few igneous pebbles; neutral; clear wavy boundary.

2Bt2—13 to 23 inches; dark yellowish brown (10YR 4/4) clay; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of secondary peds; common distinct dark grayish brown (10YR 4/2) clay films on faces of prisms; many medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; many fine distinct strong brown (7.5YR 5/6) masses of iron accumulation

throughout; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of prisms; few pebbles; slightly acid; abrupt wavy boundary.

2Bt3—23 to 28 inches; yellowish brown (10YR 5/6) clay; moderate medium subangular blocky structure; firm; few fine roots; common prominent grayish brown (10YR 5/2) and common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; few fine prominent light gray (10YR 7/2) masses of calcium carbonate accumulation around limestone fragments; 5 percent pebbles; neutral; clear irregular boundary.

2BC—28 to 35 inches; dark yellowish brown (10YR 4/4) clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few medium roots on faces of prisms; few distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common medium distinct light gray (10YR 7/2) masses of calcium carbonate accumulation around limestone fragments; 10 percent pebbles; slightly effervescent; slightly alkaline; clear wavy boundary.

2Cd—35 to 80 inches; yellowish brown (10YR 5/4) loam; massive; firm and very firm; common medium distinct grayish brown (10YR 5/2) iron depletions throughout; common medium distinct light brownish gray (10YR 6/2) iron depletions on vertical fractures surrounded by common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) masses of calcium carbonate accumulation throughout; 10 percent pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to carbonates: 20 to 36 inches
Thickness of the loess mantle: 0 to 18 inches
Content of rock fragments: 0 to 5 percent in the Ap horizon; 0 to 10 percent in the 2Bt horizon; 1 to 12 percent in the 2Cd horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Texture—silt loam

2Bt horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 6
Texture—silty clay loam, silty clay, clay, or clay loam

2BC horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 3 to 6
Texture—loam, clay loam, or fine sandy loam

2Cd horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 3 or 4
Texture—loam

Crouse Series

Depth class: Very deep
Drainage class: Well drained
Parent material: A thin layer of loess and the underlying recent Wisconsinan till over older Wisconsinan till mixed with Illinoian till material
Landform: Wisconsinan terminal moraines
Position on the landform: Backslopes, shoulders, and footslopes

Slope range: 6 to 50 percent
Adjacent soils: Miamian, Russell, and Xenia
Taxonomic class: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Crouse silt loam in an area of Crouse-Miamian silt loams, 6 to 12 percent slopes, eroded; Clinton County, Ohio; about 2.75 miles southwest of New Vienna in Green Township, about 2,490 feet west of the intersection of Ohio Highway 28 and East Fork Road, along Ohio Highway 28, about 2,190 feet south; USGS New Vienna topographic quadrangle; lat. 39 degrees 19 minutes 07 seconds N. and long. 83 degrees 44 minutes 43 seconds W.; NAD 27:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; matrix has 15 percent mixing of yellowish brown (10YR 5/6) Bt horizon material; moderate fine subangular blocky structure parting to weak fine granular; friable; many fine and medium roots throughout; many distinct dark brown (10YR 3/3) organic coatings throughout; 2 percent pebbles; neutral; clear wavy boundary.

Bt1—10 to 14 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; firm; common fine and medium roots throughout; many distinct brown (10YR 4/3) clay films on faces of peds and in root channels; common distinct dark brown (10YR 3/3) organic coatings in root channels; 2 percent pebbles; neutral; clear smooth boundary.

Bt2—14 to 19 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; firm; common fine roots throughout; many distinct brown (10YR 4/3) clay films on faces of peds; common fine distinct black (10YR 2/1) masses of manganese accumulation throughout; 3 percent pebbles; neutral; clear wavy boundary.

Bt3—19 to 27 inches; dark yellowish brown (10YR 4/4) clay loam; strong medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots throughout; many distinct brown (10YR 4/3) clay films on faces of peds; common fine and medium distinct black (10YR 2/1) masses of manganese accumulation throughout; 3 percent pebbles; neutral; gradual wavy boundary.

Bt4—27 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine prismatic structure parting to moderate medium subangular blocky; firm; common fine roots throughout; many distinct brown (10YR 4/3) clay films on faces of peds; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; common fine distinct black (10YR 2/1) masses of manganese accumulation throughout; 5 percent pebbles; slightly alkaline; clear irregular boundary.

BC—36 to 44 inches; yellowish brown (10YR 5/4) loam; weak coarse subangular blocky structure parting to moderate thin platy; firm; few fine roots between peds; common distinct brown (10YR 4/3) clay films on faces of peds; common fine and medium distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; common fine distinct black (10YR 2/1) masses of manganese accumulation throughout; common fine and medium distinct light gray (10YR 7/2) masses of calcium carbonate accumulation around limestone fragments; 6 percent pebbles; slightly effervescent; moderately alkaline; clear smooth boundary.

Bwb1—44 to 50 inches; dark yellowish brown (10YR 4/4) loam; weak very coarse subangular blocky structure parting to weak medium platy; firm; few fine roots between peds; few faint dark yellowish brown (10YR 4/4) pockets of relict clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) iron depletions throughout; common fine and medium distinct strong brown (7.5YR 5/6) and few fine prominent red (2.5YR 5/8) masses of iron accumulation throughout; common fine and medium distinct light gray (10YR 7/2) masses of calcium carbonate accumulation around limestone fragments; 6 percent pebbles; strongly effervescent; moderately alkaline; gradual wavy boundary.

Bwb2—50 to 80 inches; yellowish brown (10YR 5/4) loam; weak very coarse subangular blocky structure; firm; few fine roots between peds; few faint brown (10YR 5/3) pockets of relict clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) iron depletions throughout; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common fine and medium distinct light gray (10YR 7/2) masses of calcium carbonate accumulation around limestone fragments; 6 percent pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the combined modern and buried sola: More than 80 inches
Depth to carbonates: 30 to 60 inches
Thickness of the loess mantle: 0 to 20 inches
Content of rock fragments: 0 to 2 percent in the Ap horizon; 2 to 10 percent in the Bt and BC horizons; 5 to 14 percent in the Bwb horizon

Ap horizon:
Color—hue of 10YR and value and chroma of 3 or 4
Texture—silt loam

BE or E horizon (if it occurs):
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—silt loam

Bt horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—silty clay loam or clay loam

BC horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—loam or clay loam

Bwb horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—loam or clay loam

Dunham Series

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Loess and the underlying loamy Wisconsinan outwash over gravelly deposits
Landform: Stream terraces
Position on the landform: Treads
Slope range: 0 to 2 percent
Adjacent soils: Treaty
Taxonomic class: Fine-silty, mixed, superactive, mesic Typic Endoaquolls

Typical Pedon

Dunham silty clay loam, 0 to 2 percent slopes; Clinton County, Ohio; about 0.5 mile northeast of Melvin, in Richland Township, about 2,550 feet east of the junction of Ohio Highway 22 and Melvin Road, along Ohio Highway 22, about 3,800 feet north; USGS Sabina topographic quadrangle; lat. 39 degrees 28 minutes 34 seconds N. and long. 83 degrees 42 minutes 14 seconds W.; NAD 27:

Ap—0 to 8 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate medium subangular blocky structure; firm; common fine and medium roots; neutral; abrupt smooth boundary.

A—8 to 16 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; friable; common fine and medium roots; few pebbles; neutral; gradual smooth boundary.

Bg—16 to 22 inches; dark gray (10YR 4/1) silty clay loam; moderate medium and coarse angular blocky structure; firm; common fine roots; few fine prominent olive (5Y 5/3) and common fine prominent brown (7.5YR 4/4) masses of iron accumulation throughout; common distinct black (10YR 2/1) organic coatings on faces of peds; few pebbles; slightly acid; gradual wavy boundary.

Btg1—22 to 30 inches; dark gray (10YR 4/1) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; firm; few fine roots; few faint dark gray (10YR 4/1) clay films on faces of peds; common medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; common fine prominent brown (7.5YR 4/4) masses of iron accumulation throughout; 5 percent gravel; slightly acid; clear wavy boundary.

Btg2—30 to 34 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; firm; common faint dark grayish (10YR 4/2) clay films on faces of peds; many medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; 7 percent gravel; neutral; clear wavy boundary.

BCg1—34 to 38 inches; light brownish gray (2.5Y 6/2) silt loam; weak coarse subangular blocky structure; friable; 7 percent gravel; strongly effervescent; slightly alkaline; clear wavy boundary.

2BCg2—38 to 52 inches; light brownish gray (2.5Y 6/2) gravelly silt loam; weak coarse subangular blocky structure; friable; 20 percent gravel; strongly effervescent; slightly alkaline; clear wavy boundary.

3Cg—52 to 80 inches; grayish brown (10YR 5/2) and brown (10YR 5/3) very gravelly loamy sand; single grain; loose; 40 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 36 to 55 inches
Thickness of the mollic epipedon: 10 to 20 inches
Thickness of overwash (overwash phase): 8 to 14 inches
Thickness of loess: 24 to 50 inches
Depth to carbonates: 30 to 50 inches
Content of rock fragments: 0 to 10 in the Btg horizon; 0 to 20 percent in the 2Btg or 2BCg horizon; 15 to 70 percent in the 3Cg or 3C horizon

Ap horizon:
Color—hue of 10YR or 2.5Y, value of 2, 2.5, or 3, and chroma of 1 or 2
Texture—silty clay loam or silt loam

Bg, Btg, or BCg horizon:
Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2
Texture—silty clay loam or silt loam

2Btg or 2BCg horizon:
Color—hue of 10YR to 5Y, value of 5 or 6, and chroma of 1 or 2
Texture—loam, clay loam, silt loam, or sandy loam or their gravelly analogues

3Cg or 3C horizon:
Color—hue of 7.5YR to 5Y, value of 4 to 7, and chroma of 1 to 8
Texture—gravelly to extremely gravelly analogues of loamy sand, sand, coarse sand, or sandy loam

Eldean Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Wisconsinan outwash
Landform: Outwash terraces
Position on the landform: Treads and risers
Slope range: 2 to 12 percent
Adjacent soils: Casco and Ross
Taxonomic class: Fine, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Eldean silt loam, 2 to 6 percent slopes; Greene County, Ohio; about 0.9 mile southwest of Spring Valley, in Spring Valley Township, about 1,500 feet west of the intersection of U.S. Highway 42 and Centerville Road, along U.S. Highway 42, about 200 feet south; NW1/4 NE1/4 sec. 23; USGS Waynesville topographic quadrangle; lat. 39 degrees 36 minutes 02 seconds N. and long. 84 degrees 01 minute 24 seconds W.; NAD 27:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, brown (10YR 5/3) dry; weak fine granular structure; friable; many roots; few rounded pebbles; slightly acid; abrupt smooth boundary.

BE—8 to 13 inches; brown (10YR 4/3) silt loam; moderate fine and medium subangular blocky structure; friable; many roots; common distinct dark yellowish brown (10YR 4/4) clay depletions on faces of peds; few pebbles; moderately acid; clear wavy boundary.

Bt1—13 to 19 inches; brown (7.5YR 4/4) silty clay loam; strong coarse and medium subangular blocky structure parting to fine subangular blocky; firm; few roots; common distinct dark brown (7.5YR 3/2) clay films on faces of peds; 5 to 10 percent gravel; strongly acid; clear wavy boundary.

Bt2—19 to 24 inches; brown (7.5YR 4/4) gravelly clay loam; moderate coarse subangular blocky structure parting to strong medium and fine angular blocky; firm; few roots; common prominent dark brown (7.5YR 3/2) clay films on faces of peds and gravel; 15 to 20 percent gravel, mostly chert, granite, and quartz; moderately acid; clear wavy boundary.

Bt3—24 to 33 inches; brown (7.5YR 4/4) gravelly clay; moderate medium subangular blocky structure; firm; few roots; many prominent dark reddish brown (5YR 3/3) clay films on faces of peds; 25 to 30 percent gravel; moderately acid; abrupt wavy boundary.

BC—33 to 38 inches; dark brown (7.5YR 3/2) very gravelly coarse sandy loam; weak coarse subangular blocky structure; firm; few roots; common distinct dark brown (7.5YR 3/2) clay films on gravel; common prominent pale brown (10YR 6/3) and light gray (10YR 7/1) masses of calcium carbonate accumulation throughout; 60 percent gravel, dominantly limestone; weathered remnants of limestone are strongly effervescent; slightly alkaline; abrupt wavy boundary.

C—38 to 80 inches; brown (10YR 4/3) extremely gravelly loamy coarse sand; single grain; loose; weakly stratified; about 70 percent gravel 1 to 3 inches in diameter; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to carbonates: 18 to 36 inches
Content of rock fragments: 0 to 30 percent in the Ap horizon and the upper part of the Bt horizon; 10 to 59 percent in the lower part of the Bt horizon and in the BC horizon; 0 to 70 percent with an average of more than 30 percent in the C horizon

Ap or A horizon:
Color—hue of 10YR, value of 4, and chroma of 2 to 4
Texture—silt loam or gravelly loam

BE horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—silt loam, loam, clay loam, or silty clay loam or their gravelly analogues

Bt horizon:
Color—hue of 10YR to 5YR and value and chroma of 3 to 6
Texture—silty clay loam, clay, sandy clay, or clay loam or their gravelly or very gravelly analogues

BC horizon:
Color—hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 2 to 4
Texture—sandy loam, loam, sandy clay loam, or clay loam or their gravelly or very gravelly analogues

C horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 4
Texture—horizon is gravelly to extremely gravelly analogues of loamy sand or coarse sandy loam or has strata of sand

Fincastle Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Parent material: Loess and the underlying Wisconsinan till
Landform: Slight rises and flats on the Wisconsinan till plain
Position on the landform: Summits
Slope range: 0 to 4 percent
Adjacent soils: Treaty and Xenia
Taxonomic class: Fine-silty, mixed, superactive, mesic Aeric Epiaqualfs

Typical Pedon

Fincastle silt loam, 0 to 2 percent slopes; Rush County, Indiana; about 4 miles east and 1 mile south of Milroy, 1,750 feet east and 30 feet south of the northwest corner of sec. 23, T. 12 N., R. 10 E.; USGS Milroy, Indiana topographic quadrangle; lat. 39 degrees 28 minutes 55.7 seconds N. and long. 85 degrees 22 minutes 46 seconds W.; NAD 27:

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; many fine and very fine roots; neutral; abrupt smooth boundary.

E—10 to 13 inches; grayish brown (10YR 5/2) silt loam; weak fine subangular blocky structure; friable; common fine and very fine roots; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

Bt1—13 to 21 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine and common very fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; moderately acid; clear wavy boundary.

Bt2—21 to 27 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct dark grayish

brown (10YR 4/2) clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few very dark brown (7.5YR 2.5/2) very weakly cemented iron and manganese oxide nodules throughout; slightly acid; clear wavy boundary.

2Bt3—27 to 34 inches; yellowish brown (10YR 5/4) clay loam; moderate coarse subangular blocky structure; firm; few fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few very dark brown (7.5YR 2.5/2) very weakly cemented iron and manganese oxide nodules throughout; 3 percent pebbles; neutral; clear wavy boundary.

2Bt4—34 to 50 inches; brown (10YR 5/3) clay loam; weak fine subangular blocky structure; firm; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few very dark brown (7.5YR 2.5/2) very weakly cemented iron and manganese oxide nodules throughout; 2 percent pebbles; slightly alkaline; abrupt wavy boundary.

2BC—50 to 59 inches; yellowish brown (10YR 5/4) loam; weak medium and coarse subangular blocky structure; very firm; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few very dark brown (7.5YR 2.5/2) very weakly cemented iron and manganese oxide nodules throughout; 6 percent pebbles; strongly effervescent; moderately alkaline; clear wavy boundary.

2Cd—59 to 80 inches; yellowish brown (10YR 5/4) loam; massive; very firm; 9 percent pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to carbonates: 35 to 60 inches
Thickness of the loess mantle: 22 to 40 inches
Content of rock fragments: 2 to 7 percent in the 2Bt horizon; 5 to 8 percent in the 2BC horizon; 5 to 14 percent in the 2Cd horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Texture—silt loam

E horizon (if it occurs):
Color—hue of 10YR, value of 5 or 6, and chroma of 2
Texture—silt loam

Bt horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 6
Texture—silty clay loam or silt loam

2Bt horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 6
Texture—clay loam, silty clay loam, or loam

2BC horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 6
Texture—clay loam or loam

2Cd horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—loam or fine sandy loam

The Fincastle soils in Clinton County are considered taxadjuncts to the series because they have fewer redoximorphic depletions in the upper part of the argillic horizon than is typical for the series. This difference, however, does not significantly affect the use and management of the soils. These soils classify as fine-silty, mixed, superactive, mesic Aquic Hapludalfs.

Fox Series

Depth class: Very deep
Drainage class: Well drained
Parent material: A thin layer of loess and the underlying loamy alluvium underlain by stratified calcareous sandy outwash
Landform: Outwash terraces
Position on the landform: Treads and risers
Slope range: 0 to 12 percent
Adjacent soils: Casco, Eldean, Miamian, and Sloan
Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Fox silt loam, 0 to 2 percent slopes; Clinton County, Ohio; about 0.75 mile southwest of Lumberton, in Liberty Township, about 4,200 feet south of the intersection of Port William Road and U.S. Highway 68, along U.S. Highway 68, about 1,400 feet west; USGS Port William topographic quadrangle; lat. 39 degrees 32 minutes 50 seconds N. and long. 83 degrees 51 minutes 20 seconds W.; NAD 27:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; common fine and few medium roots; few pebbles; neutral; abrupt smooth boundary.
Bt1—10 to 20 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; common fine and few medium roots; common distinct brown (7.5YR 4/4) clay films on vertical faces of peds; common faint brown (10YR 4/3) clay depletions on faces of peds and in pores; few pebbles; slightly acid; clear wavy boundary.
Bt2—20 to 28 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; many prominent brown (7.5YR 4/4) clay films on faces of peds; 10 percent gravel; moderately acid; clear wavy boundary.
2BC—28 to 32 inches; dark brown (7.5YR 3/2) gravelly loam that has tongues of Bt horizon material 2 to 4 inches wide extending into the underlying 2C horizon material; weak coarse subangular blocky structure; friable; common fine roots; few faint brown (7.5YR 4/4) clay films on faces of peds; 15 percent gravel; slightly effervescent; slightly alkaline; clear irregular boundary.
2C—32 to 80 inches; yellowish brown (10YR 5/4) very gravelly loamy coarse sand that has tongues of 2BC horizon material; single grain; loose; 50 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to carbonates: 20 to 40 inches
Thickness of the loess mantle: 0 to 24 inches

Content of rock fragments: 0 to 5 percent in the Ap horizon; 5 to 30 percent in the Bt horizon; 10 to 30 percent in the 2BC horizon; 10 to 60 percent in the 2C horizon

Ap horizon:
Color—hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3
Texture—silt loam

Bt or 2Bt horizon:
Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 4 to 6
Texture—clay loam, sandy clay loam, sandy loam, or loam or their gravelly analogues

2BC horizon:
Color—hue of 7.5YR, value of 3 or 4, and chroma of 2 to 4
Texture—loam, sandy loam, or clay loam or their gravelly analogues

2C horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 3 or 4
Texture—loamy coarse sand or sand or their gravelly or very gravelly analogues

Hickory Series

Depth class: Very deep
Drainage class: Well drained
Parent material: A thin layer of loess and the underlying Illinoian till
Landform: Illinoian till plain
Position on the landform: Backslopes, footslopes, and shoulders
Slope range: 12 to 35 percent
Adjacent soils: Jonesboro, Morrisville, and Rossmoyne
Taxonomic class: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Hickory silt loam, 12 to 18 percent slopes, eroded; Clinton County, Ohio; about 5.5 miles north of Blanchester, in Vernon Township, about 750 feet north-northeast of the junction of Ohio Highway 730 and Reeder Road, along Ohio Highway 730, about 390 feet east; USGS Blanchester topographic quadrangle; lat. 39 degrees 21 minutes 46 seconds N. and long. 83 degrees 56 minutes 17 seconds W.; NAD 27:

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; matrix has 25 percent yellowish brown (10YR 5/4) Bt horizon material; moderate fine subangular blocky structure; friable; many medium and common fine roots; common fine faint dark brown (10YR 3/3) iron and manganese concretions throughout; few igneous pebbles; strongly acid; clear wavy boundary.

Bt1—6 to 17 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; many medium and common fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common fine distinct black (10YR 2/1) masses of iron and manganese accumulation throughout; 5 percent igneous pebbles; strongly acid; clear wavy boundary.

Bt2—17 to 23 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; common medium and few fine roots; common distinct yellowish brown (10YR 5/4) clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common fine distinct black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; 5 percent igneous pebbles; strongly acid; clear wavy boundary.

Bt3—23 to 43 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common medium and fine roots on faces of prisms; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; 10 percent igneous pebbles; strongly acid; clear irregular boundary.

BC—43 to 65 inches; yellowish brown (10YR 5/4) gravelly clay loam; moderate medium and coarse angular blocky structure; firm; common fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; 15 percent igneous pebbles; slightly effervescent; slightly alkaline; clear wavy boundary.

C—65 to 80 inches; yellowish brown (10YR 5/4) gravelly loam; massive in place, parting to moderate medium platy when removed; firm; common medium distinct grayish brown (10YR 5/2) iron depletions throughout; common fine distinct light gray (10YR 7/2) masses of calcium carbonate accumulation around limestone fragments; 20 percent igneous pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 80 inches
Depth to carbonates: 40 to 80 inches
Thickness of the loess mantle: 0 to 18 inches
Content of rock fragments: 0 to 2 percent in the Ap horizon; 0 to 15 percent in the Bt horizon; 10 to 20 percent in the BC horizon; 10 to 20 percent in the C horizon

Ap horizon:
Color—hue of 10YR, value of 3 or 4, and chroma of 2 to 4
Texture—silt loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—silty clay loam, loam, clay loam, or gravelly clay loam

BC horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—clay loam or gravelly clay loam

C horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—loam or clay loam or their gravelly analogues

Jonesboro Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loess and the underlying Illinoian till
Landform: Illinoian till plain
Position on the landform: Summits, shoulders, and footslopes
Slope range: 0 to 12 percent
Adjacent soils: Blanchester, Clermont, Rossmoyne, Schaffer, and Westboro
Taxonomic class: Fine-silty, mixed, superactive, mesic Glossaquic Hapludalfs

Typical Pedon

Jonesboro silt loam in an area of Jonesboro-Rossmoyne silt loams, 0 to 2 percent slopes; Clinton County, Ohio; about 5.25 miles north of Blanchester, in Vernon Township, about 4,000 feet northwest of the intersection of Nauvoo Road and State Route 133, along State Route 133, about 1,000 feet west; USGS Blanchester

topographic quadrangle; lat. 39 degrees 44 minutes 04 seconds N. and long. 83 degrees 59 minutes 40 seconds W.; NAD 27:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium and fine subangular blocky structure; friable; many fine and common medium roots; few fine distinct black (10YR 2/1) manganese concretions throughout; moderately acid; abrupt wavy boundary.

Bt1—7 to 14 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium and fine subangular blocky structure; friable; common fine and common medium roots; common faint brown (10YR 4/3) clay films in pores and root channels; few fine faint brown (7.5YR 4/4) masses of iron accumulation throughout; few fine distinct black (10YR 2/1) manganese concretions throughout; strongly acid; clear wavy boundary.

Bt2—14 to 18 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium and fine subangular blocky structure; friable; common fine and few medium roots; few faint brown (10YR 4/3) clay films in pores and root channels; common fine prominent light brownish gray (10YR 6/2) iron depletions throughout; common fine distinct brown (7.5YR 4/4) masses of iron accumulation throughout; very strongly acid; gradual irregular boundary.

Bt/E—18 to 28 inches; 70 percent yellowish brown (10YR 5/6) silty clay loam (Bt part); moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; 30 percent light brownish gray (2.5Y 6/2) silt loam (E part) in the upper part of horizon; E part tonguing to 10 percent in the lower part; common medium prominent light brownish gray (10YR 6/2) iron depletions throughout; many distinct light gray (10YR 7/1) clay depletions on faces of prisms; few medium distinct brown (7.5YR 4/4) masses of iron accumulation on faces of peds; common fine prominent black (10YR 2/1) manganese concretions throughout; very strongly acid; abrupt smooth boundary.

2Bt1—28 to 42 inches; brown (7.5YR 4/4) silty clay loam; moderate medium and coarse prismatic structure parting to moderate medium and coarse subangular blocky; very firm; few fine roots; many prominent grayish brown (10YR 5/2) clay films on faces of prisms; few fine distinct grayish brown (10YR 5/2) iron depletions throughout; few distinct light brownish gray (10YR 6/2) clay depletions on faces of prisms; many fine prominent black (10YR 2/1) manganese concretions throughout; moderately acid; clear wavy boundary.

2Bt2—42 to 60 inches; brown (10YR 4/3) silty clay; moderate medium subangular blocky structure; firm; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct gray (10YR 5/1) iron depletions throughout; common fine and medium distinct black (10YR 2/1) manganese concretions throughout; about 2 percent rock fragments; neutral; clear wavy boundary.

2Bt3—60 to 72 inches; yellowish brown (10YR 5/6) clay; weak medium subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium prominent grayish brown (10YR 5/2) iron depletions throughout; common fine faint strong brown (7.5YR 5/6) iron concretions throughout; about 2 percent rock fragments; slightly alkaline; clear wavy boundary.

2Bt4—72 to 80 inches; yellowish brown (10YR 5/6) silty clay; weak medium subangular blocky structure; firm; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions throughout; many medium and coarse prominent black (10YR 2/1) manganese concretions throughout; about 2 percent rock fragments; slightly alkaline.

Range in Characteristics

Thickness of the solum: More than 60 inches
Depth to bedrock: More than 80 inches

Depth to carbonates: 60 to 100 inches
Thickness of the loess mantle: 18 to 40 inches
Content of rock fragments: 0 to 2 percent in the Ap and Bt horizons; 2 to 10 percent in the 2Bt horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Texture—silt loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8
Texture—silt loam or silty clay loam

Bt/E horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 6
Texture of E part—silt loam
Texture of Bt part—silty clay loam

2Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 8
Texture—silty clay loam, silty clay, clay loam, or clay

Kokomo Series

Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Wisconsinan till
Landform: Flats and depressions on the Wisconsinan till plain
Slope range: 0 to 1 percent
Adjacent soils: Celina, Crosby, and Miamian
Taxonomic class: Fine, mixed, superactive, mesic Typic Argiaquolls

Typical Pedon

Kokomo silty clay loam, 0 to 1 percent slopes; Clinton County, Ohio; about 4 miles north-northwest of Sabina, in Wilson Township, about 1,920 feet northwest of the intersection of Burristown Road and Peelle Road, along Peelle Road, about 660 feet east; USGS Bowersville topographic quadrangle; lat. 39 degrees 32 minutes 05 seconds N. and long. 83 degrees 39 minutes 35 seconds W.; NAD 27:

Ap—0 to 10 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak coarse subangular blocky structure; firm; common fine and medium roots; few pebbles; moderately acid; clear smooth boundary.
Bg—10 to 15 inches; very dark gray (10YR 3/1) silty clay loam; moderate medium subangular blocky structure; firm; many fine and common medium roots; common medium faint dark gray (10YR 4/1) iron depletions in the matrix; many faint very dark gray (10YR 3/1) organic coatings on faces of peds; few pebbles; slightly acid; gradual wavy boundary.
Btg1—15 to 19 inches; dark gray (10YR 4/1) silty clay loam; moderate medium subangular blocky structure; firm; many fine and common medium roots; common faint dark gray (10YR 4/1) clay films on faces of peds; few faint very dark gray (10YR 3/1) organic coatings on faces of peds; few pebbles; slightly acid; gradual wavy boundary.
Btg2—19 to 26 inches; gray (2.5Y 5/1) silty clay loam; weak fine prismatic structure parting to moderate medium subangular blocky; firm; few fine and medium roots; common faint gray (10YR 5/1) clay films on vertical faces of prisms; many faint gray (10YR 5/1) clay depletions on faces of peds; many medium distinct light olive

brown (2.5Y 5/4) and common medium prominent yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; few very dark gray (10YR 3/1) krotovina; few pebbles; slightly acid; clear wavy boundary.

Btg3—26 to 32 inches; gray (10YR 5/1) silty clay loam; moderate fine prismatic structure parting to moderate medium angular blocky; firm; few fine roots; few faint gray (10YR 5/1) clay films on vertical faces of prisms; common faint gray (10YR 5/1) clay depletions on faces of peds; common coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few very dark gray (10YR 3/1) krotovina; few fine faint light brownish gray (10YR 6/2) masses of calcium carbonate accumulation on faces of peds; 3 percent pebbles; neutral; clear wavy boundary.

Bt—32 to 42 inches; yellowish brown (10YR 5/6) silty clay; moderate medium prismatic structure parting to moderate fine angular blocky; firm; few fine roots; few faint gray (10YR 5/1) clay films on vertical faces of prisms; common medium prominent gray (10YR 5/1) and dark gray (10YR 4/1) iron depletions in the matrix; few very dark gray (10YR 3/1) krotovina; 3 percent pebbles; neutral; gradual wavy boundary.

BC—42 to 51 inches; brown (7.5YR 4/4) clay loam; weak coarse subangular blocky structure; firm; few fine roots; common medium prominent gray (10YR 5/1) and dark gray (10YR 4/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; few very dark gray (10YR 3/1) krotovina; 10 percent pebbles; slightly effervescent; slightly alkaline; clear wavy boundary.

C—51 to 80 inches; brown (10YR 4/3) loam; massive; firm; very few fine roots along fracture faces; common medium distinct dark gray (10YR 4/1) iron depletions throughout; common medium distinct gray (10YR 6/1) masses of secondary carbonates along fracture faces; 10 percent pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 36 to 60 inches
Thickness of the mollic epipedon: 10 to 24 inches
Thickness of overwash: 8 to 14 inches
Depth to carbonates: 36 to 60 inches
Content of rock fragments: 0 to 5 percent in the Ap horizon; 0 to 5 percent in the Bg and Bt horizons; 5 to 14 percent in the BC horizon; 5 to 14 percent in the C horizon

Ap or A horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1
Texture—silty clay loam or silt loam

Bg horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 1 or 2
Texture—silty clay loam

Btg or Bt horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 to 6
Texture—silty clay loam, silty clay, or clay loam

BC horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—clay loam or loam

C horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—loam

Libre Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loess and the underlying Illinoian outwash
Landform: Illinoian outwash terraces
Position on the landform: Treads and risers
Slope range: 0 to 12 percent
Adjacent soils: Hickory, Morrisville, Sardinia, and Taggart
Taxonomic class: Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs

Typical Pedon

Libre silt loam, 2 to 6 percent slopes; Ross County, Ohio; about 0.3 mile southeast of Londonderry, in Liberty Township, about 1,860 feet south and 2,940 feet east of the northwest corner of sec. 14, T. 8 N., R. 20 W.; USGS Londonderry topographic quadrangle; lat. 39 degrees 15 minutes 46 seconds N. and long. 82 degrees 47 minutes 19 seconds W.; NAD 27:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, light yellowish brown (10YR 6/4) dry; weak fine granular structure parting to weak thin platy; friable; common fine roots; very strongly acid; abrupt smooth boundary.

Bt1—10 to 15 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few faint dark yellowish brown (10YR 4/6) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—15 to 29 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct dark yellowish brown (10YR 5/6) clay films on faces of peds; few fine prominent black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; very strongly acid; gradual smooth boundary.

Bt3—29 to 33 inches; yellowish brown (10YR 5/6) silt loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; few fine prominent black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; very strongly acid; clear smooth boundary.

2Btd1—33 to 39 inches; dark yellowish brown (10YR 4/6) loam; weak medium subangular blocky structure parting to weak medium platy; friable; few faint dark yellowish brown (10YR 4/6) clay films on faces of peds; few medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; very strongly acid; clear smooth boundary.

2Btd2—39 to 53 inches; yellowish brown (10YR 5/4) and brown (10YR 5/3) loam; weak medium subangular blocky structure parting to weak medium platy; friable; common distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; 2 percent gravel; very strongly acid; clear smooth boundary.

2Bt1—53 to 71 inches; strong brown (7.5YR 5/6) loam; weak coarse subangular blocky structure; friable; many distinct strong brown (7.5YR 4/6) clay films on faces of peds; many medium prominent black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; 2 percent gravel; very strongly acid; clear smooth boundary.

2Bt2—71 to 80 inches; strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; common distinct strong brown (7.5YR 4/6) clay films on faces of peds; 2 percent gravel; very strongly acid.

Range in Characteristics

Thickness of the solum: More than 80 inches

Thickness of the loess mantle: 20 to 40 inches
Depth to carbonates: More than 80 inches
Content of rock fragments: 0 to 15 percent in the 2Bt horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—silt loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—silty clay loam or silt loam

2Btd horizon:
Color—hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—silt loam, loam, or clay loam

2Bt horizon:
Color—hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—clay loam, loam, or sandy clay loam or their gravelly analogues

Losantville Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Wisconsinan till
Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders
Slope range: 2 to 6 percent
Adjacent soils: Celina, Miamian, and Wapahani
Taxonomic class: Fine, mixed, active, mesic Oxyaquic Hapludalfs

Typical Pedon

Losantville silt loam, 2 to 6 percent slopes, eroded; Henry County, Indiana; about 2 miles east of New Lisbon, about 45 feet west and 738 feet south of the northeast corner of sec. 7, T. 16 N., R. 12 E.; USGS Cambridge City, Indiana topographic quadrangle; lat. 39 degrees 51 minutes 33.4 seconds N. and long. 85 degrees 13 minutes 15.6 seconds W.; NAD 27:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; common fine and medium roots; 4 percent rock fragments; neutral; abrupt smooth boundary.
Bt1—7 to 12 inches; dark yellowish brown (10YR 4/4) clay; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; many faint dark yellowish brown (10YR 3/4) clay films on faces of peds; 3 percent rock fragments; neutral; clear wavy boundary.
Bt2—12 to 16 inches; dark yellowish brown (10YR 4/4) clay; moderate medium subangular blocky structure; firm; many faint brown (10YR 4/3) clay films on faces of peds; 4 percent rock fragments; neutral; abrupt wavy boundary.
Cd—16 to 60 inches; yellowish brown (10YR 5/4) loam; massive; very firm; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; 10 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 12 to 20 inches
Depth to carbonates: 8 to 20 inches

Content of rock fragments: 0 to 10 percent in the Ap horizon; 1 to 12 percent in the Bt horizon; 2 to 12 percent in the Cd horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 6
Texture—silt loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—clay or clay loam

BC horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—loam or clay loam

Cd horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 3 to 6
Texture—loam

Loudon Series

Depth class: Deep and very deep
Drainage class: Moderately well drained
Parent material: Loess and the underlying Illinoian till and residuum from interbedded shale and limestone
Landform: Illinoian till plain
Position on the landform: Footslopes and shoulders
Slope range: 6 to 12 percent
Adjacent soils: Hickory and Morrisville
Taxonomic class: Fine, mixed, active, mesic Aquic Hapludalfs

Typical Pedon

Loudon silt loam, 6 to 12 percent slopes, eroded; Clinton County, Ohio; about 1.5 miles south of Midland, in Jefferson Township, about 270 feet south of the intersection of Sycamore Road and Chamberlin Road, along Sycamore Road, 3,075 feet east; USGS Blanchester topographic quadrangle: lat. 39 degrees 15 minutes 31 seconds N. and long. 83 degrees 54 minutes 33 seconds W.; NAD 27:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; matrix has 25 percent mixing of dark yellowish brown (10YR 4/6) Bt horizon material; moderate fine granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

Bt1—8 to 17 inches; dark yellowish brown (10YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; common distinct yellowish brown (10YR 5/4) clay films on faces of peds; common distinct brown (10YR 4/3) organic coatings on faces of peds and in root channels; slightly acid; gradual wavy boundary.

2Bt2—17 to 26 inches; brown (7.5YR 4/4) clay; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots on faces of prisms; common distinct yellowish brown (10YR 5/4) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common distinct pale brown (10YR 6/3) clay depletions on faces of peds; common medium prominent black (10YR 2/1) masses of iron and manganese accumulation throughout; few pebbles; strongly acid; clear wavy boundary.

2Bt3—26 to 36 inches; dark yellowish brown (10YR 4/4) clay; moderate medium subangular blocky structure; firm; few fine roots; common distinct yellowish brown (10YR 5/4) clay films on faces of peds; common medium distinct grayish brown

(10YR 5/2) iron depletions in the matrix; many prominent strong brown (7.5YR 5/8) masses of iron accumulation throughout; common medium and fine distinct black (10YR 2/1) iron and manganese concretions throughout; few pebbles; very strongly acid; clear wavy boundary.

2Bt4—36 to 55 inches; yellowish brown (10YR 5/6) clay; moderate medium subangular blocky structure; firm; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common fine faint strong brown (7.5YR 5/6) masses of iron accumulation throughout; few fine prominent black (10YR 2/1) iron and manganese concretions throughout; few pebbles; moderately acid; abrupt smooth boundary.

3BC—55 to 68 inches; light olive brown (2.5Y 5/4) channery clay; weak coarse subangular blocky structure; firm; common medium distinct light brownish gray (2.5Y 6/2) iron depletions in the matrix; common prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; 15 percent limestone fragments; slightly effervescent; slightly alkaline; gradual wavy boundary.

3Cr—68 to 72 inches; light olive brown (2.5Y 5/4) shale that is interbedded with light gray (10YR 7/2) limestone; abrupt wavy boundary.

3R—72 to 80 inches; light gray (10YR 7/2) limestone bedrock.

Range in Characteristics

Thickness of the solum: 40 to 70 inches
Depth to bedrock: 40 to 70 inches
Depth to carbonates: 32 to 65 inches
Thickness of the loess mantle: 10 to 20 inches
Content of rock fragments: 0 to 2 percent in the Ap horizon; 0 to 2 percent in the Bt horizon; 2 to 14 percent in the 2Bt horizon; 5 to 15 percent in the 3BC or 3Bt horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 1 to 3
Texture—silt loam

Bt horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—silt loam or silty clay loam

2Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 8
Texture—silty clay, clay, or silty clay loam

3BC or 3Bt horizon:
Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 6
Texture—clay, silty clay loam, or silty clay or their channery analogues

Lumberton Series

Depth class: Deep
Drainage class: Well drained
Parent material: Loess and loamy outwash over limestone residuum
Landform: Stream terraces and valley sides
Position on the landform: Treads, risers, and backslopes
Slope range: 0 to 50 percent
Adjacent soils: Ockley
Taxonomic class: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Lumberton silt loam, 0 to 2 percent slopes; Clinton County, Ohio; about 1,600 feet south of Port William, in Liberty Township, about 1,050 feet south of the junction of Ohio Highway 134 and Sabina Road, along Sabina Road, 350 feet west; USGS Port William topographic quadrangle; lat. 39 degrees 32 minutes 54 seconds N. and long. 83 degrees 46 minutes 50 seconds W.; NAD 27:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium and coarse granular structure; friable; common fine and few medium roots; 2 percent pebbles; slightly acid; abrupt smooth boundary.

Bt1—9 to 14 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few faint brown (7.5YR 4/4) clay films on faces of peds; common faint brown (10YR 4/3) organic coatings on faces of peds; 2 percent pebbles; moderately acid; clear smooth boundary.

2Bt2—14 to 26 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common prominent brown (7.5YR 4/4) clay films on faces of peds; 5 percent pebbles; moderately acid; clear wavy boundary.

2Bt3—26 to 32 inches; brown (10YR 4/3) clay loam; moderate medium subangular blocky structure; firm; few fine roots; many faint brown (10YR 4/3) clay films on faces of peds; 5 percent pebbles; moderately acid; clear wavy boundary.

2BC—32 to 38 inches; dark yellowish brown (10YR 4/4) clay loam; weak coarse subangular blocky structure; friable; few fine roots; few distinct brown (7.5YR 4/4) clay films on faces of peds; 5 percent limestone pararock fragments; slightly effervescent; neutral; diffuse wavy boundary.

3C—38 to 54 inches; dark yellowish brown (10YR 4/4) and pale brown (10YR 6/3) very channery fine sandy loam; massive; friable; common fine faint brown (10YR 4/3) masses of iron accumulation throughout; 55 percent channers; slightly effervescent; moderately alkaline; clear irregular boundary.

3R—54 to 58 inches; brownish yellow (10YR 6/6) limestone bedrock.

Range in Characteristics

Thickness of the solum: 24 to 38 inches
Depth to bedrock: 40 to 60 inches
Depth to carbonates: 22 to 37 inches
Content of rock fragments: 0 to 2 percent in the Ap horizon; 2 to 10 percent in the Bt and 2Bt horizons; 5 to 14 percent in the 2BC horizon; 30 to 70 percent in the 3C horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Texture—silt loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—silt loam or silty clay loam

2Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—silty clay loam, loam, or clay loam

2BC horizon:
Color—hue of 10YR to 5Y, value of 3 to 5, and chroma of 3 to 6
Texture—clay loam or clay

3C horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 3 to 6

Texture—sandy loam or fine sandy loam or their channery to extremely channery analogues

Miamian Series

Depth class: Very deep
Drainage class: Well drained
Parent material: A thin layer of loess and the underlying Wisconsinan till
Landform: Wisconsinan till plain
Position on the landform: Summits, backslopes, footslopes, and shoulders
Slope range: 2 to 50 percent
Adjacent soils: Celina, Crosby, Kokomo, Losantville, and Thrifton
Taxonomic class: Fine, mixed, active, mesic Oxyaquic Hapludalfs

Typical Pedon

Miamian silt loam, 2 to 6 percent slopes, eroded; Clinton County, Ohio; about 1.5 miles southeast of Memphis, in Wayne Township, about 1,020 feet southeast of the intersection of Van Pelt Road and Ohio Highway 72, along Ohio Highway 72, about 450 feet west; USGS Memphis topographic quadrangle; lat. 39 degrees 23 minutes 44 seconds N. and long. 83 degrees 35 minutes 45 seconds W.; NAD 27:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; matrix has 10 percent mixing of yellowish brown (10YR 5/6) Bt horizon material; weak fine and medium subangular blocky structure; friable; many fine and medium roots; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common faint dark brown (10YR 3/3) organic coatings on faces of peds; few igneous pebbles; neutral; abrupt wavy boundary.

Bt1—9 to 12 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium and fine subangular blocky structure; firm; common fine and medium roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common distinct brown (10YR 4/3) clay depletions on faces of peds; few fine faint yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few igneous pebbles; neutral; clear smooth boundary.

2Bt2—12 to 19 inches; yellowish brown (10YR 5/6) clay; moderate medium subangular blocky structure; firm; common fine and medium roots; many prominent dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine faint yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few igneous pebbles; slightly acid; clear wavy boundary.

2BC—19 to 24 inches; yellowish brown (10YR 5/4) clay loam; weak coarse subangular blocky structure; firm; few fine and medium roots; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few medium distinct light brownish gray (10YR 6/2) masses of secondary carbonates on faces of peds; 7 percent igneous pebbles and cobbles; slightly effervescent; slightly alkaline; abrupt smooth boundary.

2Cd1—24 to 34 inches; dark yellowish brown (10YR 4/4) loam; massive with platy partings; very firm; few fine roots; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common medium distinct gray (10YR 6/1) masses of calcium carbonate accumulation throughout; 10 percent igneous pebbles and cobbles; strongly effervescent; moderately alkaline; clear wavy boundary.

2Cd2—34 to 80 inches; dark yellowish brown (10YR 4/4) loam; massive; very firm; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common medium distinct gray (10YR 6/1) masses of calcium carbonate

accumulation on vertical faces of fractures; 10 percent igneous pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to carbonates: 18 to 35 inches
Thickness of the loess mantle: 0 to 18 inches
Content of rock fragments: 0 to 5 percent in the Ap and Bt horizons; 1 to 14 percent in the 2Bt horizon; 5 to 15 percent in the 2Cd horizon

Ap horizon:
Color—typically hue of 10YR, value of 3 to 5, and chroma of 2 or 3; horizon has chroma of 4 in some eroded areas
Texture—silt loam or clay loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—silt loam or silty clay loam

2Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—silty clay loam, clay, or clay loam

2BC horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—clay loam or loam

2Cd horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4
Texture—loam or gravelly loam

Morrisville Series

Depth class: Deep
Drainage class: Moderately well drained
Parent material: Loamy Illinoian till and the underlying residuum from interbedded limestone and clay shale
Landform: Illinoian till plain
Position on the landform: Backslopes, footslopes, and shoulders
Slope range: 12 to 25 percent
Adjacent soils: Hickory, Jonesboro, and Rossmoyne
Taxonomic class: Fine, mixed, active, mesic Oxyaquic Hapludalfs

Typical Pedon

Morrisville silty clay loam, 18 to 25 percent slopes, eroded; Clinton County, Ohio; about 2.5 miles south of Westboro, in Jefferson Township, about 120 feet south of the intersection of Sycamore Road and Chamberlin Road, along Sycamore Road, about 3,600 feet east; USGS Blanchester topographic quadrangle; lat. 39 degrees 15 minutes 33 seconds N. and long. 83 degrees 54 minutes 38 seconds W.; NAD 27:

Ap—0 to 3 inches; brown (10YR 4/3) silty clay loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; many fine and medium roots; 2 percent igneous pebbles; neutral; abrupt smooth boundary.
Bt1—3 to 7 inches; brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; common faint dark yellowish brown

(10YR 4/4) clay films on vertical faces of peds; common distinct brown (10YR 4/3) organic coatings in pores and on faces of peds; 2 percent igneous pebbles; slightly acid; clear wavy boundary.

Bt2—7 to 12 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium subangular blocky structure; firm; few fine roots; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine distinct black (10YR 2/1) masses of iron and manganese accumulation throughout; 2 percent igneous pebbles and 5 percent limestone fragments; neutral; abrupt wavy boundary.

2Bt3—12 to 22 inches; light olive brown (2.5Y 5/4) channery clay; moderate medium subangular blocky structure; firm; few fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds (clay films are not calcareous); 30 percent limestone fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

2BC1—22 to 37 inches; light olive brown (2.5Y 5/4) very flaggy clay; weak coarse subangular blocky structure; firm; few distinct dark yellowish brown (10YR 4/4) clay films on faces of fragments and on pressure faces; common medium distinct light brownish gray (2.5Y 6/2) iron depletions on vertical and horizontal stress surfaces; 35 percent limestone fragments; strongly effervescent; moderately alkaline; clear smooth boundary.

2BC2—37 to 47 inches; light olive brown (2.5Y 5/4) very flaggy silty clay; weak coarse subangular blocky structure; firm; few distinct dark yellowish brown (10YR 4/4) clay films on faces of fragments and on pressure faces; common medium distinct grayish brown (2.5Y 5/2) iron depletions throughout; common medium distinct light olive brown (2.5Y 5/6) masses of iron accumulation throughout; 50 percent slightly weathered limestone flagstones and channers; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2C—47 to 54 inches; light olive brown (2.5Y 5/4) extremely flaggy silty clay; massive; firm; common medium distinct light brownish gray (2.5Y 6/2) iron depletions throughout; common medium distinct light olive brown (2.5Y 5/6) masses of iron accumulation throughout; 60 percent unweathered limestone flagstones and channers; strongly effervescent; moderately alkaline; clear smooth boundary.

2R—54 to 60 inches; grayish brown (10YR 5/2) limestone bedrock that has interbedded light olive brown (2.5Y 5/4) shale.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to bedrock: 40 to 60 inches
Depth to carbonates: 10 to 30 inches
Thickness of Illinoian till mantle: Less than 40 inches
Content of rock fragments: 2 to 10 percent in the Ap and Bt horizons; 15 to 30 percent in the 2Bt horizon; 30 to 59 percent in the 2BC horizon; 50 to 75 percent in the 2C horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—silty clay loam or silt loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—silty clay loam, clay loam, silty clay, or clay

2Bt horizon:
Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 6
Texture—channery analogues of silty clay or clay

2BC horizon:
Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 6
Texture—flaggy or very flaggy analogues of silty clay loam, silty clay, or clay

2C horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4
Texture—very flaggy or extremely flaggy analogues of silty clay or silty clay loam

Nicely Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loess and the underlying Illinoian till
Landform: Illinoian till plain
Position on the landform: Footslopes and shoulders
Slope range: 6 to 12 percent
Adjacent soils: Blanchester, Clermont, Jonesboro, Rossmoyne, Schaffer, and Westboro
Taxonomic class: Fine-loamy, mixed, active, mesic Aquic Hapludalfs

Typical Pedon

Nicely silt loam, 6 to 12 percent slopes, eroded; Clinton County, Ohio; about 2 miles north-northeast of Lynchburg, in Clark Township, about 700 feet north-northeast of the intersection of Ohio Highway 134 and Canada Road, along Ohio Highway 134, about 600 feet east; USGS Martinsville topographic quadrangle; lat. 39 degrees 16 minutes 28 seconds N. and long. 83 degrees 46 minutes 28 seconds W.; NAD 27:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; matrix has 30 percent mixing of yellowish brown (10YR 5/6) BE horizon material; moderate fine subangular blocky structure; friable; many fine and medium roots; neutral; clear wavy boundary.

BE—7 to 12 inches; yellowish brown (10YR 5/6) silt loam; moderate fine and medium subangular blocky structure; friable; many fine and medium roots; few faint yellowish brown (10YR 5/6) clay films on faces of peds; many distinct yellowish brown (10YR 5/4) clay depletions on faces of peds; moderately acid; clear irregular boundary.

Bt/E—12 to 18 inches; yellowish brown (10YR 5/6) silty clay loam (Bt part) and pale brown (10YR 6/3) silt loam (E part); moderate medium subangular blocky structure; friable; many fine and medium roots; common distinct yellowish brown (10YR 5/6) clay films on faces of peds; many distinct pale brown (10YR 6/3) clay depletions on faces of peds and in pores; common medium distinct dark brown (10YR 3/3) masses of iron and manganese accumulation throughout; 2 percent igneous pebbles; very strongly acid; clear wavy boundary.

2Bt1—18 to 32 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; firm; common fine roots between peds; many distinct brown (10YR 5/3) clay films on faces of peds and in pores; many medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common medium prominent dark red (2.5YR 3/6) masses of iron accumulation throughout; few fine prominent black (10YR 2/1) masses of iron and manganese accumulation throughout; 2 percent igneous pebbles; very strongly acid; gradual wavy boundary.

2Bt2—32 to 40 inches; yellowish brown (10YR 5/6) clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine and fine roots; many distinct brown (10YR 5/3) clay films on faces of peds and in pores; many medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common medium prominent dark red (2.5YR 3/6) masses of iron

accumulation throughout; 2 percent igneous pebbles; very strongly acid; clear wavy boundary.

2Bt3—40 to 56 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; firm; many distinct brown (10YR 5/3) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint strong brown (7.5YR 5/6) masses of iron accumulation throughout; 2 percent igneous pebbles; very strongly acid; clear wavy boundary.

2Bt4—56 to 74 inches; yellowish brown (10YR 5/4) clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; many distinct yellowish brown (10YR 5/4) clay films on faces of peds; common prominent grayish brown (10YR 5/2) clay films in root channels and in pores; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium distinct brown (7.5YR 5/2) iron depletions throughout; common medium faint brown (7.5YR 4/4) masses of iron accumulation throughout; 2 percent igneous pebbles; very strongly acid; clear wavy boundary.

2Bt5—74 to 80 inches; yellowish brown (10YR 5/6) clay loam; weak coarse prismatic structure parting to weak coarse subangular blocky; firm; common prominent grayish brown (10YR 5/2) clay films on faces of peds and in pores; many medium prominent grayish brown (2.5Y 5/2) iron depletions in the matrix; many distinct pale brown (10YR 6/3) clay depletions on vertical faces of peds; common medium faint strong brown (7.5YR 5/6) masses of iron accumulation throughout; 2 percent igneous pebbles; very strongly acid.

Range in Characteristics

Thickness of the solum: More than 60 inches
Depth to carbonates: 60 to more than 80 inches
Thickness of the loess mantle: 10 to 20 inches
Content of rock fragments: 0 to 2 percent in the Ap, BE, and Bt/E horizons; 2 to 5 percent in the 2Bt horizon

Ap horizon:
Color—hue of 10YR, value of 4, and chroma of 3 or 4
Texture—silt loam

BE horizon (if it occurs):
Color—hue of 10YR, value of 5, and chroma of 4 to 6
Texture—silt loam

Bt/E horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 3 to 6
Texture—silty clay loam or silt loam

2Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—clay loam

Ockley Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Loess or silty material and the underlying loamy Wisconsinan outwash over stratified calcareous gravelly and sandy outwash or loess or silty material and the underlying loamy Wisconsinan outwash over Wisconsinan till
Landform: Outwash terraces or outwash terraces on the till plain
Position on the landform: Treads and risers

Slope range: 0 to 12 percent
Adjacent soils: Eldean, Sloan, Sligo, and Stringley
Taxonomic class: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Ockley silt loam, 0 to 2 percent slopes; Clinton County, Ohio; about 4.25 miles northeast of Clarksville, in Adams Township, about 600 feet east of the intersection of Ohio Highway 380 and Todd Fork Road, along Todd Fork Road, about 600 feet north; USGS Clarksville topographic quadrangle: lat. 39 degrees 27 minutes 00 seconds N. and long. 83 degrees 56 minutes 15 seconds W.; NAD 27:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium and fine granular structure; friable; many fine and common medium roots; moderately acid; abrupt smooth boundary.

Bt1—9 to 15 inches; brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; common fine and many medium roots; few faint brown (7.5YR 4/4) clay films on faces of peds; many faint brown (10YR 4/3) clay depletions on faces of peds; few fine prominent black (10YR 2/1) manganese concretions throughout; few fine pebbles; moderately acid; gradual wavy boundary.

Bt2—15 to 20 inches; brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; common distinct brown (7.5YR 4/4) clay films on vertical faces of peds; common faint brown (10YR 4/3) clay depletions on faces of peds; few fine pebbles; moderately acid; clear wavy boundary.

2Bt3—20 to 26 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; friable; common fine roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; 5 percent gravel; moderately acid; clear wavy boundary.

2Bt4—26 to 34 inches; brown (7.5YR 4/4) gravelly clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; 30 percent gravel; moderately acid; gradual wavy boundary.

2Bt5—34 to 39 inches; brown (7.5YR 4/4) gravelly clay loam that has thin strata of gravelly loam and sandy loam; moderate medium subangular blocky structure; firm; common distinct brown (7.5YR 4/4) clay films on faces of peds; 20 percent gravel; moderately acid; clear wavy boundary.

2Bt6—39 to 48 inches; brown (7.5YR 4/4) very gravelly sandy clay loam; moderate medium subangular blocky structure; friable; few distinct brown (10YR 4/3) clay films on faces of peds; 35 percent gravel; slightly effervescent; slightly alkaline; clear wavy boundary.

2BC—48 to 64 inches; brown (7.5YR 4/4) sandy loam that has strata of sandy clay loam; weak medium subangular blocky structure; friable; common distinct dark brown (7.5YR 3/2) clay films on faces of peds; slightly effervescent; slightly alkaline; clear irregular boundary.

3C1—64 to 72 inches; yellowish brown (10YR 5/4) gravelly loamy sand that has thin strata of sandy loam; single grain; loose; 30 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

3C2—72 to 80 inches; yellowish brown (10YR 5/4) very gravelly loamy sand; single grain; loose; 35 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 72 inches
Depth to carbonates: 40 to 72 inches
Depth to till: Typically more than 8 feet; less than 6 feet in till substratum phases
Thickness of the loess or silty mantle: 0 to 20 inches

Content of rock fragments: 0 to 2 percent in the Ap horizon; 0 to 10 percent in the Bt horizon and the upper part of the 2Bt horizon; 20 to 35 percent in the lower part of the 2Bt horizon; 20 to 35 percent in the 3C horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—silt loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—silt loam, loam, or silty clay loam

2Bt horizon (upper part):
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—clay loam, loam, or sandy clay loam

2Bt horizon (lower part):
Color—hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 2 to 6
Texture—gravelly or very gravelly analogues of sandy clay loam, sandy loam, or coarse sandy loam or, less commonly, clay loam or gravelly clay loam

2BC horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 6
Texture—sandy clay loam, sandy loam, or coarse sandy loam or their gravelly or very gravelly analogues

3C horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 3 or 4
Texture—dominantly gravelly or very gravelly analogues of loamy coarse sand or coarse sand that has strata of loamy sand, sand, extremely gravelly sand, or sandy loam; the till substratum phase is loam or gravelly loam

Odell Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Parent material: A thin layer of loess and the underlying Wisconsinan till
Landform: Flats on the Wisconsinan till plain
Position on the landform: Summits
Slope range: 0 to 2 percent
Adjacent soils: Corwin, Crosby, Kokomo, and Treaty
Taxonomic class: Fine-loamy, mixed, superactive, mesic Aquic Argiudolls

Typical Pedon

Odell silt loam, 0 to 2 percent slopes; Fayette County, Ohio; about 4 miles west of Washington Court House, in Jasper Township, about 2,100 feet east of the intersection of Reynolds Road and Ford Road, along Ford Road, about 300 feet south; USGS Milledgeville topographic quadrangle; lat. 39 degrees 35 minutes 07 seconds N. and long. 83 degrees 31 minutes 54 seconds W.; NAD 27:

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, very dark grayish brown (10YR 3/2) rubbed; moderate medium and fine granular structure; friable; moderately acid; abrupt smooth boundary.
A—8 to 11 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine subangular blocky structure; friable; moderately acid; gradual smooth boundary.
Bt1—11 to 16 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; common distinct brown (10YR 4/3) clay films on faces of peds;

many fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; many fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common faint very dark grayish brown (10YR 3/2) and dark grayish brown (10YR 4/2) organic coatings on faces of peds; strongly acid; clear smooth boundary.

Bt2—16 to 23 inches; brown (10YR 4/3) clay; weak fine and medium prismatic structure parting to moderate medium subangular blocky; firm; common prominent brown (10YR 4/3) clay films on vertical faces of peds; common distinct brown (10YR 4/3) clay films on horizontal faces of peds; many fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; many fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common faint dark grayish brown (10YR 4/2) and common distinct dark gray (10YR 4/1) and very dark gray (10YR 3/1) organic coatings on faces of peds; moderately acid; gradual smooth boundary.

Bt3—23 to 30 inches; brown (10YR 4/3) clay loam; weak fine and medium prismatic structure parting to moderate medium subangular blocky; firm; common distinct brown (10YR 4/3) clay films on vertical faces of peds; many fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; many fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common faint dark grayish brown (10YR 4/2) and common distinct dark gray (10YR 4/1) organic coatings on faces of peds; neutral; abrupt wavy boundary.

Cg—30 to 39 inches; grayish brown (10YR 5/2) silt loam; massive; firm; many medium and coarse prominent (10YR 5/6) masses of iron accumulation throughout; strongly effervescent; slightly alkaline; gradual wavy boundary.

C—39 to 80 inches; yellowish brown (10YR 5/4) loam; massive; firm; many medium prominent grayish brown (10YR 5/2) iron depletions throughout; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation throughout; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 35 to 50 inches
Thickness of the mollic epipedon: 10 to 14 inches
Depth to carbonates: 22 to 50 inches
Thickness of the loess mantle: 0 to 18 inches
Content of rock fragments: 0 to 14 percent in the Bt horizon; 0 to 14 percent in the C horizon

Ap or A horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 or 2
Texture—silt loam

Bt horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—silty clay loam, clay, or clay loam

Cg or C horizon:
Color—hue of 10YR, value of 5, and chroma of 2 to 4
Texture—loam

Randolph Series

Depth class: Moderately deep
Drainage class: Somewhat poorly drained
Parent material: Wisconsinan till over limestone bedrock
Landform: Flats and areas along drainageways on the Wisconsinan till plain

Position on the landform: Summits
Slope range: 0 to 2 percent
Adjacent soils: Lumberton, Miamian, and Treaty
Taxonomic class: Fine, mixed, active, mesic Aeric Endoaqualfs

Typical Pedon

Randolph silt loam, 0 to 2 percent slopes; Greene County, Ohio; about 0.5 mile southwest of Clifton, in Miami Township, about 1,320 feet west of the intersection of Wilberforce-Clifton Road and Clifton Road, along Clifton Road, about 160 feet north; USGS Clifton topographic quadrangle; lat. 39 degrees 48 minutes 26 seconds N. and long. 83 degrees 49 minutes 53 seconds W.; NAD 27:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; many roots; moderately acid; clear smooth boundary.

A—9 to 13 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; many roots; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; few fine faint yellowish brown (10YR 5/4) masses of iron accumulation throughout; moderately acid; clear smooth boundary.

BE—13 to 18 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; common roots; many medium distinct grayish brown (10YR 5/2) and faint brown (10YR 5/3) iron depletions in the matrix; many distinct light brownish gray (10YR 6/2) clay depletions on faces of peds; strongly acid; clear smooth boundary.

Bt1—18 to 24 inches; brown (10YR 5/3) silty clay loam; strong medium subangular blocky structure; firm; common roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; many fine and medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct very dark brown (10YR 2/2) iron and manganese concretions throughout; few igneous pebbles; strongly acid; gradual smooth boundary.

Bt2—24 to 37 inches; yellowish brown (10YR 5/4) silty clay; moderate medium subangular blocky structure; firm; common roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; few igneous pebbles; neutral; abrupt wavy boundary.

2R—37 inches; light gray (10YR 7/1) limestone bedrock.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches
Content of rock fragments: 0 to 10 percent in the Bt horizon

Ap or A horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 to 3
Texture—silt loam

BE or Bt horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4
Texture—silty clay loam, clay loam, silty clay, or clay

The Randolph soils in Clinton County are considered taxadjuncts to the series because they have a mollic epipedon that is not defined in the range for the series. This difference, however, does not significantly affect the use and management of the soils. These soils classify as fine, mixed, active, mesic Typic Endoaquolls.

Reesville Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Parent material: Loess and the underlying Wisconsinan till
Landform: Flats and slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders
Slope range: 0 to 4 percent
Adjacent soils: Birkbeck, Fincastle, Treaty, and Xenia
Taxonomic class: Fine-silty, mixed, superactive, mesic Aquic Hapludalfs

Typical Pedon

Reesville silt loam, 0 to 2 percent slopes; Clinton County, Ohio; about 2.1 miles southwest of Bloomington, in Wilson Township, about 3,750 feet northwest of the intersection of Prairie Road and Sabina Road, along Sabina Road, 1,000 feet east; USGS Bowersville topographic quadrangle; lat. 39 degrees 31 minutes 10 seconds N. and long. 83 degrees 44 minutes 04 seconds W.; NAD 27:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light gray (10YR 7/2) dry; weak fine granular structure; friable; few fine roots; common fine distinct black (10YR 2/1) masses of manganese accumulation throughout; neutral; abrupt smooth boundary.

Bt1—8 to 12 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and fine subangular blocky structure; friable; common fine roots; many distinct yellowish brown (10YR 5/4) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common faint yellowish brown (10YR 5/4) clay depletions on faces of peds; common fine distinct black (10YR 2/1) masses of manganese accumulation throughout; neutral; clear wavy boundary.

Bt2—12 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and fine subangular blocky structure; friable; common fine roots; common distinct yellowish brown (10YR 5/4) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine and medium prominent reddish brown (2.5YR 5/4) masses of iron accumulation throughout; common fine distinct black (10YR 2/1) masses of manganese accumulation throughout; neutral; clear wavy boundary.

Bt3—16 to 25 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) masses of manganese accumulation throughout; neutral; clear smooth boundary.

Bt4—25 to 33 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation throughout; common fine distinct black (10YR 2/1) masses of manganese accumulation throughout; neutral; clear smooth boundary.

Bt5—33 to 39 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium and coarse subangular blocky structure; firm; few fine roots; many prominent grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) clay films on faces of peds; many medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common fine prominent black (10YR 2/1) masses of manganese accumulation throughout; slightly alkaline; gradual wavy boundary.

BC1—39 to 47 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium subangular blocky structure; firm; common distinct gray (10YR 6/1) clay films on faces of peds; common medium prominent gray (10YR 6/1) iron depletions in the matrix; common fine prominent black (10YR 2/1) masses of manganese accumulation throughout; few fine prominent light gray (10YR 7/1) masses of calcium carbonate accumulation throughout; slightly effervescent; slightly alkaline; gradual wavy boundary.

2BC2—47 to 54 inches; dark yellowish brown (10YR 4/4) silt loam; weak coarse and medium subangular blocky structure; firm; many medium distinct gray (10YR 6/1) iron depletions throughout; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; many fine distinct black (10YR 2/1) masses of manganese accumulation throughout; few fine distinct light gray (10YR 7/1) masses of calcium carbonate accumulation throughout; few igneous pebbles; slightly effervescent; slightly alkaline; abrupt smooth boundary.

2C1—54 to 64 inches; dark yellowish brown (10YR 4/4) clay loam; massive; firm; common medium distinct gray (10YR 6/1) iron depletions throughout; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; few fine distinct black (10YR 2/1) masses of manganese accumulation throughout; few fine distinct light gray (10YR 7/2) masses of calcium carbonate accumulation throughout; 2 percent shale and igneous pebbles; strongly effervescent; moderately alkaline; clear wavy boundary.

2C2—64 to 80 inches; dark yellowish brown (10YR 4/4) loam; massive; firm; common fine distinct grayish brown (10YR 5/2) iron depletions throughout; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common fine distinct black (10YR 2/1) masses of manganese accumulation throughout; common fine distinct light gray (10YR 7/1) masses of calcium carbonate accumulation throughout; 10 percent igneous pebbles and cobbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Depth to bedrock: More than 6 feet
Depth to carbonates: 26 to 55 inches
Thickness of the loess mantle: 40 to 60 inches
Content of rock fragments: 0 to 2 percent in the Ap, BE, Bt, and BC horizons; 2 to 14 percent in the 2BC and 2C horizons

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Texture—silt loam

BE horizon (if it occurs):
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 4
Texture—silt loam

Bt horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 6
Texture—silt loam or silty clay loam

BC or 2BC horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6
Texture—silt loam or silty clay loam

C horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4
Texture—silt loam

2C horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4
Texture—silt loam, clay loam, or loam

Ross Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Loamy alluvium
Landform: Flood plains
Slope range: 0 to 1 percent
Adjacent soils: Sloan
Taxonomic class: Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls

Typical Pedon

Ross silt loam, 0 to 1 percent slopes, occasionally flooded; Ross County, Ohio; about 1.6 miles northeast of Bainbridge, in Paxton Township, about 1,950 feet north of the intersection of U.S. Highway 50 and Township Road 30; USGS Morgantown topographic quadrangle; lat. 39 degrees 14 minutes 13 seconds N. and long. 83 degrees 14 minutes 42 seconds W.; NAD 27:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate medium and fine granular structure; friable; many fine roots; few rock fragments; slightly alkaline; clear smooth boundary.
A1—8 to 20 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; moderate medium subangular blocky structure; friable; common fine roots; many distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few rock fragments; slightly alkaline; clear smooth boundary.
A2—20 to 29 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; moderate medium subangular blocky structure; friable; common fine roots; few rock fragments; slightly alkaline; clear wavy boundary.
Bw—29 to 40 inches; brown (10YR 4/3) loam; weak coarse subangular blocky structure; friable; few fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; 10 percent rock fragments; moderately alkaline; clear smooth boundary.
C—40 to 80 inches; dark yellowish brown (10YR 4/4) sandy loam that has strata of coarse sandy loam; massive; very friable; 10 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 24 to 45 inches
Thickness of the mollic epipedon: 24 to 40 inches
Depth to carbonates: 24 to 45 inches
Content of rock fragments: 0 to 5 percent in the Ap horizon; 0 to 10 percent in the Bw horizon; 0 to 45 percent in the C horizon

Ap or A horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 3
Texture—loam or silt loam

Bw horizon:
Color—hue of 10YR, value of 2 to 5, and chroma of 1 to 4
Texture—loam or silt loam that has subhorizons of clay loam, silty clay loam, or sandy loam

C horizon:

Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 1 to 4

Texture—silt loam, loam, sandy loam, or sandy clay loam or their gravelly analogues

Rossburg Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Loamy alluvium
Landform: Slight rises on flood plains
Slope range: 0 to 2 percent
Adjacent soils: Sligo and Stringley
Taxonomic class: Fine-loamy, mixed, superactive, mesic Fluventic Hapludolls

Typical Pedon

Rossburg silt loam, 0 to 2 percent slopes, rarely flooded; Clinton County, Ohio; about 2.75 miles northeast of Clarksville, in Adams Township, about 250 feet northeast of the junction of Clarksville Road and Pyle Road, along Clarksville Road, about 450 feet north; USGS Clarksville topographic quadrangle; lat. 39 degrees 25 minutes 35 seconds N. and long. 83 degrees 56 minutes 34 seconds W.; NAD 27:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine and medium subangular blocky structure; friable; common fine and medium and few coarse roots; many distinct black (10YR 2/1) organic coatings on faces of peds; strongly acid; abrupt smooth boundary.

A—8 to 21 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate medium and coarse subangular blocky structure; friable; many fine, common medium, and few coarse roots; many faint black (10YR 2/1) organic coatings throughout; slightly acid; gradual wavy boundary.

Bw1—21 to 35 inches; brown (10YR 4/3) silt loam; weak coarse prismatic structure parting to weak medium subangular blocky; firm; common fine and medium and few coarse roots on faces of prisms and in worm channels; many very fine pores; many faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common distinct black (10YR 2/1) organic coatings in root channels and worm channels; neutral; gradual wavy boundary.

Bw2—35 to 45 inches; dark yellowish brown (10YR 4/4) loam; weak medium and coarse subangular blocky structure; friable; common fine and medium roots on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common distinct dark grayish brown (10YR 4/2) organic coatings in root channels and worm channels; about 10 percent fine limestone gravel; neutral; clear wavy boundary.

BC—45 to 48 inches; brown (10YR 4/3) gravelly sandy loam; massive; friable; few fine and medium roots; about 20 percent limestone gravel; slightly effervescent; slightly alkaline; clear wavy boundary.

C1—48 to 56 inches; dark grayish brown (10YR 4/2) gravelly sandy loam; massive; friable; few fine and medium roots; about 15 percent gravel; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C2—56 to 61 inches; brown (10YR 5/3) very gravelly sandy loam; single grain; loose; common fine and few medium roots; about 40 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

C3—61 to 80 inches; yellowish brown (10YR 5/6) very gravelly loam that has pockets of silt loam; single grain; loose; common fine roots; about 50 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 24 to 60 inches
Thickness of the mollic epipedon: 10 to 24 inches
Depth to bedrock: More than 80 inches
Depth to carbonates: 40 to 60 inches
Content of rock fragments: 0 to 5 percent in the Ap horizon; 0 to 10 percent in the Bw horizon; 0 to 20 percent in the C horizon above a depth of 48 inches and as much as 50 percent below a depth of 48 inches

Ap or A horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 to 3
Texture—silt loam

Bw horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 2 to 6
Texture—typically silt loam or loam; fine sandy loam or sandy loam in the lower part of horizon in some areas

BC horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 6
Texture—loam or sandy loam or their gravelly analogues

C horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 6
Texture—loam, silt loam, fine sandy loam, or sandy loam or their gravelly or very gravelly analogues

Rossmoyne Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loess and the underlying Illinoian till
Landform: Illinoian till plain
Position on the landform: Summits and shoulders
Slope range: 0 to 12 percent
Adjacent soils: Jonesboro, Schaffer, and Westboro
Taxonomic class: Fine-silty, mixed, superactive, mesic Aquic Fragiudalfs

Typical Pedon

Rossmoyne silt loam in an area of Jonesboro-Rossmoyne silt loams, 0 to 2 percent slopes; Clinton County, Ohio; about 5.25 miles north of Blanchester, in Vernon Township, about 3,790 feet northwest of the intersection of Nauvoo Road and Ohio Highway 133, along Ohio Highway 133, about 1,100 feet west; USGS Blanchester topographic quadrangle; lat. 39 degrees 22 minutes 08 seconds N. and long. 83 degrees 59 minutes 44 seconds W.; NAD 27:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium subangular blocky structure; common fine and few medium roots; neutral; abrupt smooth boundary.
BE—9 to 11 inches; yellowish brown (10YR 5/6) silt loam; moderate fine subangular blocky structure; friable; common fine and few medium roots; few distinct pale brown (10YR 6/3) clay depletions on faces of peds; few fine prominent black (10YR 2/1) manganese concretions throughout; neutral; clear wavy boundary.
Bt1—11 to 19 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; common distinct yellowish brown (10YR 5/6) clay films on faces of peds; few fine prominent grayish brown

(10YR 5/2) iron depletions in the matrix; common prominent light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; few fine prominent black (10YR 2/1) manganese concretions throughout; strongly acid; clear wavy boundary.

Bt2—19 to 26 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct yellowish brown (10YR 5/6) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common prominent light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; few medium faint strong brown (7.5YR 5/6) masses of iron accumulation on faces of peds; few fine prominent black (10YR 2/1) manganese concretions throughout; strongly acid; clear wavy boundary.

2Btx—26 to 37 inches; yellowish brown (10YR 5/6) silty clay loam; moderate very coarse and medium prismatic structure parting to moderate medium and coarse subangular blocky; very firm; brittle; common distinct yellowish brown (10YR 5/6) and common distinct light brownish gray (10YR 6/2) clay films on faces of prisms; common medium prominent grayish brown (10YR 5/2) iron depletions throughout; common medium faint strong brown (7.5YR 5/6) masses of iron accumulation throughout; common medium prominent black (10YR 2/1) masses of manganese accumulation throughout; 2 percent igneous pebbles; strongly acid; clear smooth boundary.

2Bt3—37 to 77 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; many distinct dark grayish brown (10YR 4/2) and common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions throughout; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation on faces of peds; common medium and fine distinct black (10YR 2/1) masses of manganese accumulation throughout; 2 percent igneous pebbles; very strongly acid; clear wavy boundary.

2Bt4—77 to 80 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) and common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint strong brown (7.5YR 5/6) masses of iron accumulation on faces of peds; 2 percent igneous pebbles; moderately acid.

Range in Characteristics

Thickness of the solum: More than 80 inches
Depth to carbonates: More than 80 inches
Thickness of the loess mantle: 18 to 40 inches
Content of rock fragments: 0 to 2 percent in the Ap, BE, and Bt horizons; 2 to 5 percent in the 2Btx horizon; 2 to 10 percent in the 2Bt horizon

Ap horizon:
Color—typically hue of 10YR, value of 4 or 5, and chroma of 2 or 3; horizon has chroma of 4 in eroded areas
Texture—silt loam

BE horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 6
Texture—silt loam

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—silt loam or silty clay loam

2Btx horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—silty clay loam, loam, or clay loam or, less commonly, silt loam or silty clay loam

2Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6
Texture—clay loam, loam, or clay

Russell Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Loess and the underlying Wisconsinan till
Landform: Slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders
Slope range: 2 to 6 percent
Adjacent soils: Crouse, Miamian, and Xenia
Taxonomic class: Fine-silty, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Russell silt loam; Putnam County, Indiana; on a southwest-facing, convex, 4 percent slope, about 2.5 miles northwest of Filmore, 2,600 feet north and 2,000 feet west of the southeast corner of sec. 1, T. 14 N., R. 4 W.; USGS Greencastle, Indiana topographic quadrangle; lat. 39 degrees 40 minutes 54.1 seconds N. and long. 86 degrees 48 minutes 2.4 seconds W.; NAD 27:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; many fine roots; many fine pores; slightly acid; abrupt smooth boundary.
Bt1—8 to 13 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; many fine roots; many fine pores; common distinct brown (7.5YR 4/4) clay films on faces of peds; strongly acid; clear wavy boundary.
Bt2—13 to 28 inches; brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; many fine roots; many distinct brown (7.5YR 4/4) clay films on faces of peds; very strongly acid; clear wavy boundary.
2Bt3—28 to 39 inches; dark yellowish brown (10YR 4/4) clay loam; moderate coarse subangular blocky structure; firm; common fine roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; 3 percent rock fragments; strongly acid; clear wavy boundary.
2Bt4—39 to 52 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; common distinct brown (7.5YR 4/4) clay films on faces of peds; 3 percent rock fragments; strongly acid; clear wavy boundary.
2BC—52 to 58 inches; yellowish brown (10YR 5/4) clay loam; weak coarse subangular blocky structure; firm; few distinct brown (7.5YR 4/4) clay films on faces of peds; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few very dark brown (7.5YR 2.5/2) very weakly cemented iron and manganese oxide nodules throughout; 4 percent rock fragments; slightly effervescent; moderately alkaline; clear wavy boundary.
2Cd—58 to 80 inches; yellowish brown (10YR 5/4) loam; massive; very firm; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Thickness of the loess mantle: 20 to 40 inches
Content of rock fragments: 0 to 2 percent in the Ap horizon; 0 to 2 percent in the Bt horizon; 2 to 10 percent in the 2Bt horizon; 2 to 14 percent in the 2BC or 2BC horizon; 2 to 14 percent in the 2Cd horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Texture—silt loam

E horizon (if it occurs):
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—silt loam

Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6
Texture—silt loam or silty clay loam

2Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6
Texture—clay loam, loam, or silty clay loam

2BC horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6
Texture—clay loam or loam

2Cd horizon:
Color—hue of 10YR or 2.5Y, value of 5, and chroma of 3 to 6
Texture—loam or fine sandy loam

Sardinia Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Stratified silty and loamy outwash or old alluvium
Landform: Stream terraces
Position on the landform: Treads
Slope range: 0 to 6 percent
Adjacent soils: Libre, Taggart, and Williamsburg
Taxonomic class: Fine-silty, mixed, active, mesic Aquic Hapludalfs

Typical Pedon

Sardinia silt loam, 0 to 2 percent slopes; Highland County, Ohio; in Liberty Township, about 420 feet west and 950 feet north of the intersection of Selph Road and Ohio Highway 138; USGS Hillsboro topographic quadrangle; lat. 39 degrees 13 minutes 57 seconds N. and long. 83 degrees 34 minutes 55 seconds W.; NAD 27:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; common fine roots; slightly acid; abrupt smooth boundary.

Bt1—9 to 16 inches; brown (10YR 4/3) silt clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; common distinct brown (10YR 5/3) and pale brown (10YR 6/3) clay depletions on faces of peds; slightly acid; clear wavy boundary.

Bt2—16 to 22 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; many distinct brown (7.5YR 4/4) clay films on faces of peds; few fine distinct light brownish gray (10YR 6/2) iron depletions; slightly acid; clear wavy boundary.

Bt3—22 to 32 inches; yellowish brown (10YR 5/4) silt loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; common medium distinct light brownish gray (10YR 6/2) iron depletions; common faint pale brown (10YR 6/3) clay depletions on vertical faces of peds; 2 percent rock fragments; strongly acid; clear wavy boundary.

Btx—32 to 55 inches; yellowish brown (10YR 5/4) silt loam; weak coarse prismatic structure parting to moderate medium platy; firm; slightly brittle; common faint brown (10YR 5/3) clay films on vertical faces of peds; many medium distinct light brownish gray (10YR 6/2) iron depletions; many medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; common medium prominent concretions and masses of iron and manganese oxide accumulation; strongly acid; diffuse smooth boundary.

2BC—55 to 71 inches; yellowish brown and grayish brown (10YR 5/2) loam; weak thick platy structure; friable; common medium faint light brownish gray (10YR 6/2) iron depletions; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; 10 percent rock fragments; neutral; clear wavy boundary.

2C—71 to 82 inches; yellowish brown (10YR 5/4 and 5/8) and grayish brown (10YR 5/2) gravelly sandy clay loam; massive; friable; 25 percent rock fragments; neutral in the upper part of horizon and slightly effervescent and slightly alkaline in the lower part.

Range in Characteristics

Thickness of the solum: More than 60 inches
Depth to carbonates: More than 60 inches
Content of rock fragments: 0 to 10 percent in the Ap and Bt horizons; 2 to 35 percent in the 2BC horizon; 2 to 35 percent in the 2C horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—silt loam

Bt and Btx horizons:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6
Texture—silt loam or silty clay loam; horizon has thin subhorizons of loam in some pedons

Bt or 2Btx horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6
Texture—loam or clay loam

2BC horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4
Texture—clay loam, sandy clay loam, silty clay loam, silt loam, silty clay, or loam or their gravelly analogues

2C horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 8
Texture—stratified loam, clay loam, sandy clay loam, silty clay loam, or silt loam or their gravelly analogues

Schaffer Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Parent material: Loess and the underlying Illinoian till
Landform: Flats and slight rises on the Illinoian till plain
Position on the landform: Summits and shoulders
Slope range: 0 to 4 percent
Adjacent soils: Blanchester, Clermont, and Westboro
Taxonomic class: Fine-silty, mixed, active, mesic Aeric Fragiaqualfs

Typical Pedon

Schaffer silt loam, 0 to 2 percent slopes; Brown County, Ohio; about 1.25 miles southeast of Fayetteville, in Perry Township, about 5,250 feet east-northeast of the junction of U.S. Highway 50 and U.S. Highway 68, along U.S. Highway 50, about 4,780 feet south; USGS Fayetteville topographic quadrangle; lat. 39 degrees 10 minutes 32 seconds N. and long. 83 degrees 54 minutes 52 seconds W.; NAD 27:

Ap—0 to 8 inches; brown (10YR 5/3) silt loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure parting to weak fine granular; very friable; common fine roots; common fine faint dark yellowish brown (10YR 4/4) masses of iron accumulation in the matrix; neutral; abrupt smooth boundary.

BE—8 to 12 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure parting to weak thin platy; very friable; few fine roots; many fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; few fine faint brown (10YR 4/3) wormcasts in the matrix; strongly acid; clear smooth boundary.

Bt—12 to 17 inches; light yellowish brown (10YR 6/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; many fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; very strongly acid; clear wavy boundary.

Eg/Bt—17 to 21 inches; light brownish gray (10YR 6/2) (Eg part) and yellowish brown (10YR 5/6) (Bt part) silty clay loam; weak medium prismatic structure parting to weak medium subangular blocky; firm; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; many prominent light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; common prominent light brownish gray (10YR 6/2) clay depletions on horizontal faces of peds; few fine prominent black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; very strongly acid; clear smooth boundary.

Bt/Eg—21 to 29 inches; yellowish brown (10YR 5/6) (Bt part) and light brownish gray (10YR 6/2) (Eg part) silty clay loam; weak medium prismatic structure parting to weak medium subangular blocky; firm; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct pale brown (10YR 6/3) iron depletions in the matrix; many prominent light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; few fine prominent black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; 1 percent igneous pebbles; very strongly acid; gradual smooth boundary.

2Btx1—29 to 38 inches; yellowish brown (10YR 5/4) clay loam; moderate very coarse and coarse prismatic structure parting to moderate medium subangular blocky; very firm; 65 percent brittle; many prominent grayish brown (10YR 5/2) clay films on faces of prisms; few distinct dark yellowish brown (10YR 4/4) clay films on horizontal faces of prisms; common faint light brownish gray (10YR 6/2) clay

depletions on vertical faces of prisms; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common fine distinct black (10YR 2/1) masses of iron and manganese accumulation on faces of prisms; 5 percent igneous pebbles; strongly acid; clear smooth boundary.

2Btx2—38 to 45 inches; dark yellowish brown (10YR 4/4) loam; moderate very coarse prismatic structure parting to weak medium subangular blocky; very firm; 40 percent brittle; common prominent gray (10YR 5/1) clay films on vertical faces of prisms; many distinct gray (10YR 6/1) clay films on faces of prisms; common fine distinct light brownish gray (10YR 6/2) iron depletions throughout; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; few fine distinct black (10YR 2/1) masses of iron and manganese accumulation on faces of prisms; 5 percent igneous pebbles; moderately acid; gradual smooth boundary.

2Bt1—45 to 55 inches; dark yellowish brown (10YR 4/4) clay loam; weak very coarse prismatic structure parting to weak medium subangular blocky; firm; many distinct gray (10YR 5/1) clay films on vertical faces of prisms; common distinct gray (10YR 6/1) clay films on faces of prisms; common medium distinct grayish brown (10YR 5/2) iron depletions throughout; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; few fine distinct black (10YR 2/1) masses of iron and manganese accumulation on faces of prisms; 5 percent igneous pebbles; neutral; gradual smooth boundary.

2Bt2—55 to 71 inches; dark yellowish brown (10YR 4/4) clay loam; weak very coarse prismatic structure parting to moderate fine angular blocky; friable; common distinct dark yellowish brown (10YR 3/4) clay films on faces of prisms; many distinct gray (10YR 5/1) clay films on vertical faces of prisms; common distinct gray (10YR 5/1) clay films on horizontal faces of prisms; few medium distinct grayish brown (10YR 5/2) iron depletions throughout; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation on faces of prisms; few fine distinct black (10YR 2/1) masses of iron and manganese accumulation on faces of prisms; 6 percent igneous pebbles; neutral; gradual wavy boundary.

2Bt3—71 to 80 inches; yellowish brown (10YR 5/6) clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; common prominent gray (10YR 6/1) clay films on faces of prisms; common prominent gray (10YR 5/1) clay films on vertical faces of prisms; common faint dark yellowish brown (10YR 3/4) clay films on faces of prisms; few medium prominent grayish brown (10YR 5/2) iron depletions throughout; few fine prominent black (10YR 2/1) masses of iron and manganese accumulation on faces of prisms; 8 percent igneous pebbles; neutral.

Range in Characteristics

Thickness of the solum: More than 80 inches
Depth to carbonates: More than 80 inches
Depth to a paleosol formed in till: Typically 40 to 60 inches
Depth to the top of the fragipan: 25 to 36 inches
Thickness of the loess mantle: 18 to 40 inches
Content of rock fragments: less than 1 percent in the A, BE, and Bt horizons; 1 to 10 percent in the 2Btx and 2Bt horizons

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—silt loam

BE horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—silt loam

Bt horizon:
Color—hue of 10YR, value of 4 to 7, and chroma of 2 to 4
Texture—silt loam or silty clay loam

Eg/Bt and Bt/Eg horizons:
Color in Eg part—hue of 10YR, value of 6 or 7, and chroma of 2 or 3
Color in Bt part—hue of 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—silty clay loam or silt loam

2Btx horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 6
Texture—silty clay loam, clay loam, or loam

2Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6
Texture—clay loam or loam

Secondcreek Series

Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Lacustrine sediments and the underlying Illinoian till
Landform: Glacial lake (relict) on the Illinoian till plain
Slope range: 0 to 1 percent
Adjacent soils: Blanchester, Clermont, Schaffer, and Westboro
Taxonomic class: Fine, mixed, superactive, mesic Typic Endoaquolls

Typical Pedon

Secondcreek silty clay loam, 0 to 1 percent slopes; Clinton County, Ohio; about 1.5 miles north of Midland, in Marion Township, about 2,100 feet southwest of the junction of Shull Road and Second Creek Road, along Second Creek Road, 2,300 feet east; USGS Blanchester topographic quadrangle; lat. 39 degrees 19 minutes 43 seconds N. and long. 83 degrees 54 minutes 44 seconds W.; NAD 27:

Ap—0 to 9 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; moderate medium and fine subangular blocky structure; firm; many fine roots; many fine prominent brown (7.5YR 4/4) masses of iron accumulation; moderately acid; clear wavy boundary.

A—9 to 23 inches; very dark gray (N 3/0) silty clay loam, dark gray (N 4/0) dry; moderate medium subangular blocky structure; firm; many fine roots; many medium and fine prominent brown (7.5YR 4/4) masses of iron accumulation; slightly acid; gradual wavy boundary.

Bg1—23 to 29 inches; dark gray (10YR 4/1) silty clay; moderate fine prismatic structure parting to moderate fine and medium subangular blocky; firm; common fine roots; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct black (N 2.5/0) manganese concretions throughout; many prominent very dark gray (N 3/0) organic coatings on faces of prisms; many black (10YR 2/1) krotovina; neutral; clear wavy boundary.

Bg2—29 to 44 inches; dark gray (10YR 4/1) silty clay; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; common faint dark gray (10YR 4/1) iron depletions on faces of peds; common medium prominent olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; many prominent strong brown (7.5YR 5/6) masses of iron accumulation throughout; common fine distinct black (N 2.5/0) manganese concretions

throughout; common prominent very dark gray (N 3/0) organic coatings on faces of prisms; many black (10YR 2/1) krotovina; neutral; gradual wavy boundary.

Bg3—44 to 49 inches; light brownish gray (2.5Y 6/2) silty clay loam; weak medium and coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many distinct dark gray (N 4/0) iron depletions on faces of peds; many medium distinct olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; common prominent yellowish brown (10YR 5/6) masses of iron accumulation throughout; common prominent very dark gray (N 3/0) organic coatings on faces of prisms; many black (10YR 2/1) krotovina; neutral; clear wavy boundary.

Bg4—49 to 57 inches; dark grayish brown (10YR 4/2) silty clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many distinct dark gray (N 4/0) iron depletions on faces of peds; common medium distinct olive brown (2.5Y 4/4) masses of iron accumulation throughout; many black (10YR 2/1) krotovina; slightly alkaline; clear wavy boundary.

2Bg5—57 to 68 inches; dark gray (N 4/0) clay loam; weak coarse prismatic structure parting to weak medium subangular blocky; firm; few fine roots; common faint dark gray (10YR 4/1) iron depletions on faces of peds; common medium prominent olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; common prominent yellowish brown (10YR 5/6) masses of iron accumulation throughout; many black (10YR 2/1) krotovina; 2 percent pebbles; slightly alkaline; clear wavy boundary.

2Bg6—68 to 74 inches; gray (N 5/0) clay loam; weak medium subangular blocky structure; firm; few fine faint dark gray (10YR 4/1) iron depletions on faces of peds; common medium prominent olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; common prominent yellowish brown (10YR 5/6) masses of iron accumulation throughout; many black (10YR 2/1) krotovina in the upper part of horizon; 3 percent pebbles; slightly alkaline; clear wavy boundary.

2BCg—74 to 80 inches; gray (N 5/0) clay loam; weak medium subangular blocky structure; firm; few medium prominent olive brown (2.5Y 4/4) masses of iron accumulation in the matrix; common prominent yellowish brown (10YR 5/6) masses of iron accumulation throughout; many distinct light gray (10YR 7/2) masses of calcium carbonate accumulation throughout; 7 percent pebbles; slightly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: More than 80 inches
Thickness of the mollic epipedon: 10 to 24 inches
Thickness of overwash (overwash phase): 8 to 14 inches
Depth to bedrock: More than 80 inches
Depth to carbonates: 65 to 80 inches
Content of rock fragments: 0 to 1 percent in the Ap and Bg horizons; 2 to 10 percent in the 2Bg and 2BC horizons

Ap or A horizon:
Color—horizon has hue of 10YR or is neutral, has value of 2, 2.5, or 3, and has chroma of 0 to 2
Texture—silty clay loam or silt loam

Bg horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2
Texture—silty clay loam or silty clay

2Bg and 2BCg horizons:
Color—horizons have hue of 2.5Y or are neutral, have value of 3 to 6, and have chroma of 0 to 2
Texture—silty clay loam or clay loam

Shoals Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Parent material: Loamy alluvium
Landform: Flood plains
Slope range: 0 to 1 percent
Adjacent soils: Sligo and Sloan
Taxonomic class: Fine-loamy, mixed, superactive, nonacid, mesic Aeric Fluvaquents

Typical Pedon

Shoals silt loam, 0 to 1 percent slopes, occasionally flooded; Clinton County, Ohio; about 2 miles southwest of Lynchburg, in Clark Township, about 420 feet south-southeast of the junction of Wise Road and Swartz Road, along Swartz Road, about 2,190 feet east; USGS Lynchburg topographic quadrangle; lat. 39 degrees 13 minutes 29 seconds N. and long. 83 degrees 49 minutes 02 seconds W.; NAD 27:

Ap1—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine subangular blocky structure; friable; common fine roots; common fine distinct black (10YR 2/1) manganese concretions throughout; many faint dark grayish brown (10YR 4/2) organic coatings on faces of peds; neutral; clear wavy boundary.

Ap2—8 to 12 inches; brown (10YR 4/3) silt loam; weak coarse subangular blocky structure; friable; common fine roots; common fine distinct black (10YR 2/1) manganese concretions throughout; many faint dark grayish brown (10YR 4/2) organic coatings on faces of peds; neutral; clear smooth boundary.

Bg—12 to 24 inches; grayish brown (10YR 5/2) silt loam; weak coarse subangular blocky structure parting to moderate fine and medium subangular blocky; friable; few fine roots; many medium prominent yellowish brown (10YR 5/6) and common medium distinct yellowish brown (10YR 5/4) and brown (7.5YR 4/4) masses of iron accumulation in the matrix; common fine and medium distinct black (10YR 2/1) masses of manganese accumulation throughout; 2 percent gravel; neutral; clear wavy boundary.

Bw—24 to 38 inches; yellowish brown (10YR 5/4) clay loam; weak coarse subangular blocky structure; friable; many medium distinct grayish brown (10YR 5/2) and common medium distinct dark grayish brown (10YR 4/2) iron depletions in the matrix; many medium distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; common medium distinct black (10YR 2/1) masses of manganese accumulation throughout; common fine distinct black (10YR 2/1) manganese concretions throughout; 2 percent gravel; neutral; clear wavy boundary.

C1—38 to 52 inches; strong brown (7.5YR 5/6) clay loam; massive; firm; many medium prominent dark grayish brown (10YR 4/2) and common medium prominent dark gray (10YR 4/1) and grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation throughout; common fine and medium prominent black (10YR 2/1) concretions and masses of manganese accumulation throughout; 2 percent gravel; neutral; clear wavy boundary.

C2—52 to 80 inches; yellowish brown (10YR 5/6) clay loam; massive; firm; many medium prominent dark grayish brown (10YR 4/2) and dark gray (5Y 4/1) iron depletions in the matrix; common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation throughout; common fine and medium prominent black (10YR 2/1) concretions and masses of manganese accumulation throughout; 2 percent gravel; neutral.

Range in Characteristics

Thickness of the solum: 30 to 50 inches

Depth to carbonates: More than 60 inches
Content of rock fragments: 0 to 2 percent in the Ap horizon; 0 to 2 percent in the Bw horizon; 0 to 10 percent in the C horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Texture—silt loam

Bg or Bw horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4
Texture—silt loam or loam or, less commonly, clay loam, fine sandy loam, sandy loam, sandy clay loam, or silty clay loam

C or Cg horizon:
Color—hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 1 to 6
Texture—horizon commonly is stratified with loam, fine sandy loam, sandy loam, or clay loam and has thin strata of loamy sand or sand

Sligo Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loamy alluvium
Landform: Flood plains
Slope range: 0 to 2 percent
Adjacent soils: Miamian, Ockley, Sloan, and Stringley
Taxonomic class: Fine-loamy, mixed, superactive, nonacid, mesic Oxyaquic Udifluvents

Typical Pedon

Sligo loam, 0 to 1 percent slopes, occasionally flooded; Clinton County, Ohio; about 5.5 miles north-northeast of Blanchester, in Vernon Township, about 180 feet south of the junction of Ohio Highway 730 and Reeder Road, along Ohio Highway 730, about 740 feet west; USGS Blanchester topographic quadrangle; lat. 39 degrees 23 minutes 39 seconds N. and long. 83 degrees 56 minutes 30 seconds W.; NAD 27:

Ap—0 to 9 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; many fine and common medium roots; many faint dark brown (10YR 3/3) organic coatings on faces of peds and in root channels and worm channels; very slightly effervescent; slightly alkaline; clear wavy boundary.
C1—9 to 25 inches; brown (10YR 4/3) loam; weak medium and fine subangular blocky structure; friable; few fine and medium roots; common faint dark brown (10YR 3/3) organic coatings on faces of peds and in root channels; slightly alkaline; clear smooth boundary.
C2—25 to 31 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; common fine roots; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; common faint brown (10YR 4/3) organic coatings on faces of peds and in root channels; neutral; clear smooth boundary.
C3—31 to 36 inches; brown (10YR 4/3) sandy loam; weak fine subangular blocky structure; friable; common fine roots; common fine faint brown (7.5YR 4/4) masses of iron accumulation throughout; common faint brown (10YR 4/3) organic coatings on faces of peds and in root channels; neutral; clear smooth boundary.
C4—36 to 49 inches; brown (10YR 4/3) sandy loam; weak fine subangular blocky

structure; friable; few fine roots; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; many medium faint brown (7.5YR 4/4) masses of iron accumulation throughout; 2 percent pebbles; neutral; clear smooth boundary.

Cg1—49 to 58 inches; grayish brown (10YR 5/2) loamy coarse sand; weak coarse subangular blocky structure; friable; few fine roots; common medium distinct brown (7.5YR 4/4) masses of iron accumulation throughout; 2 percent pebbles; slightly alkaline; clear smooth boundary.

C´—58 to 66 inches; yellowish brown (10YR 5/4) coarse sand; single grain; loose; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation throughout; 6 percent pebbles; very slightly effervescent; slightly alkaline; clear wavy boundary.

Cg2—66 to 76 inches; grayish brown (2.5Y 5/2) very gravelly coarse sand; single grain; loose; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation throughout; 50 percent pebbles consisting of granite and some flint and limestone; strongly effervescent; moderately alkaline; clear wavy boundary.

Cg3—76 to 80 inches; light brownish gray (10YR 6/2) extremely gravelly loamy coarse sand; single grain; loose; 65 percent pebbles; violently effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: More than 40 inches
Content of rock fragments: 0 to 5 percent in the Ap horizon; 0 to 20 percent in the C horizon above a depth of 40 inches and 0 to 65 percent below a depth of 40 inches

Ap horizon:
Color—hue of 10YR and value and chroma of 3 or 4
Texture—loam or silt loam

C horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4
Texture—silt loam, loam, sandy loam, or loamy coarse sand or their gravelly analogues

Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2
Texture—loamy coarse sand or coarse sand or their gravelly to extremely gravelly analogues

Sloan Series

Depth class: Very deep
Drainage class: Very poorly drained
Parent material: Loamy alluvium
Landform: Flood plains
Slope range: 0 to 1 percent
Adjacent soils: Sligo and Stringley
Taxonomic class: Fine-loamy, mixed, superactive, mesic Fluvaquentic Endoaquolls

Typical Pedon

Sloan silt loam, sandy substratum, 0 to 1 percent slopes, occasionally flooded; Clinton County, Ohio; about 1.75 miles southeast of New Antioch, in Green Township, about 4,300 feet northwest of the intersection of Dailey Road and Antioch Road, along Antioch Road, 150 feet east; USGS Sabina topographic quadrangle; lat. 39 degrees 23 minutes 26 seconds N. and long. 83 degrees 43 minutes 05 seconds W.; NAD 27:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine and medium subangular blocky structure; friable; common fine and few medium roots; neutral; clear wavy boundary.

A1—7 to 14 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure; friable; common fine roots; many faint very dark gray (10YR 3/1) organic coatings on faces of peds and in root channels; neutral; abrupt wavy boundary.

A2—14 to 21 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; moderate medium subangular blocky structure; firm; common fine roots; few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation throughout; many faint (10YR 2/1) organic coatings on faces of peds and in root channels; few pebbles; neutral; clear irregular boundary.

Bg1—21 to 25 inches; dark gray (10YR 4/1) clay loam; moderate medium angular blocky structure; firm; common fine roots; many fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation throughout; many faint black (10YR 2/1) organic coatings on faces of peds and in root channels; many black (10YR 2/1) krotovina as much as 2 inches wide; 5 percent pebbles; slightly alkaline; clear irregular boundary.

Bg2—25 to 37 inches; dark gray (10YR 4/1) loam; moderate medium subangular blocky structure; firm; few fine roots; common faint gray (10YR 5/1) iron depletions on faces of peds; many medium prominent strong brown (7.5YR 5/6) masses of iron accumulation throughout; common faint black (10YR 2/1) organic coatings on faces of peds, in pore spaces, and in root channels and worm channels; 5 percent pebbles; slightly alkaline; clear wavy boundary.

BCg—37 to 48 inches; grayish brown (10YR 5/2) and gray (10YR 5/1) loam; weak coarse subangular blocky structure; friable; few fine roots; many medium distinct yellowish brown (10YR 5/4) masses of iron accumulation in the matrix; few pebbles; slightly alkaline; clear wavy boundary.

Cg1—48 to 68 inches; grayish brown (10YR 5/2) gravelly loam; massive; friable; few fine roots; common medium distinct yellowish brown (10YR 5/4) and many medium prominent strong brown (7.5YR 5/6) masses of iron accumulation throughout; common faint light gray (10YR 7/2) masses of calcium carbonate accumulation around pebbles; 20 percent pebbles; slightly effervescent; moderately alkaline; abrupt wavy boundary.

Cg2—68 to 80 inches; gray (10YR 5/1) gravelly loamy sand; single grain; loose; 30 percent pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 20 to 60 inches
Thickness of the mollic epipedon: 10 to 24 inches
Depth to carbonates: 22 to 80 inches
Depth to sandy textures: More than 60 inches
Content of gravel: 0 to 2 percent in the Ap horizon; 0 to 5 percent in the Bg horizon; 0 to 34 percent in the C horizon

Ap or A horizon:
Color—hue of 10YR or 2.5Y, value of 2, 2.5, or 3, and chroma of 0 to 2
Texture—silt loam

Bg horizon:
Color—hue of 10YR to 5Y, value of 3 to 5, and chroma of 0 to 2
Texture—silty clay loam, clay loam, silt loam, or loam

BCg or BC horizon:
Color—hue of 10YR to 5Y, value of 3 to 6, and chroma of 0 to 4
Texture—loam, silty clay loam, clay loam, or silt loam

Cg or C horizon:
Color—hue of 10YR, 2.5Y, or 5Y, value of 3 to 6, and chroma of 1 to 4
Texture—typically stratified silty clay loam, clay loam, loam, sandy loam, loamy sand, or sand or their gravelly analogues

Stringley Series

Depth class: Very deep
Drainage class: Well drained
Parent material: Calcareous stratified alluvium
Landform: Flood plains
Slope range: 0 to 2 percent
Adjacent soils: Sligo
Taxonomic class: Coarse-loamy, mixed, superactive, calcareous, mesic Typic Udifluvents

Typical Pedon

Stringley loam in an area of Stringley-Sligo loams, 0 to 2 percent slopes, occasionally flooded; Clinton County, Ohio; about 3 miles northeast of Clarksville, in Adams Township, about 3,155 feet southwest of the intersection of Beechgrove Road and Clarksville Road, along Clarksville Road, about 1,210 feet south; USGS Clarksville topographic quadrangle; lat. 39 degrees 55 minutes 39 seconds N. and long. 83 degrees 56 minutes 10 seconds W.; NAD 27:

Ap—0 to 6 inches; dark brown (10YR 3/3) loam, light brownish gray (10YR 6/2) dry; weak fine and medium subangular blocky structure; friable; many fine and common medium roots; strongly effervescent; moderately alkaline; clear wavy boundary.
C1—6 to 15 inches; brown (10YR 4/3) sandy loam; massive; friable; many fine and common medium roots; strongly effervescent; moderately alkaline; clear wavy boundary.
C2—15 to 19 inches; brown (10YR 4/3) sandy loam that has thin irregular strata of brown (10YR 5/3) sand; massive; friable; common fine and medium roots; strongly effervescent; moderately alkaline; clear smooth boundary.
C3—19 to 38 inches; brown (10YR 4/3) sandy loam that has thin strata of yellowish brown (10YR 5/4) sand; massive; friable; common medium and few fine roots; 2 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.
C4—38 to 44 inches; brown (10YR 4/3) loamy sand; massive; very friable; few medium roots; few dark brown (10YR 3/3) organic coatings in root channels; 2 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.
C5—44 to 48 inches; brown (10YR 4/3) sandy loam that has thin strata of brown (10YR 5/3) sand; massive; very friable; common medium faint grayish brown (10YR 5/2) iron depletions throughout; many medium distinct reddish brown (5YR 4/4) masses of iron accumulation throughout; few medium distinct black (10YR 2/1) masses of iron and manganese accumulation throughout; 10 percent gravel; strongly effervescent; moderately alkaline; clear irregular boundary.
2C6—48 to 80 inches; brown (10YR 4/3) extremely gravelly loamy sand; single grain; loose; common medium distinct reddish brown (5YR 4/4) masses of iron accumulation on rock fragments; few medium distinct black (10YR 2/1) masses of iron and manganese accumulation on rock fragments; 70 percent gravel; violently effervescent; strongly alkaline.

Range in Characteristics

Depth to 2C horizon: 40 to 60 inches

Content of rock fragments: 0 to 5 percent in the Ap horizon; 0 to 14 percent in the C horizon; 35 to 80 percent in the 2C horizon

Ap horizon:
Color—hue of 10YR and value and chroma of 3 or 4
Texture—loam

C horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—loam, sandy loam, or loamy sand

2C horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—very gravelly or extremely gravelly loamy sand

Taggart Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Parent material: Loess and the underlying Illinoian outwash
Landform: Illinoian outwash terraces
Position on the landform: Treads
Slope range: 0 to 2 percent
Adjacent soils: Libre
Taxonomic class: Fine-silty, mixed, active, mesic Aeric Epiaqualfs

Typical Pedon

Taggart silt loam, 0 to 2 percent slopes; Morgan County, Indiana; 3 miles southeast of Martinsville, 1,460 feet east and 1,320 feet north of the southwest corner of sec. 7, T. 11 N., R. 2 E.; USGS Cope, Indiana topographic quadrangle; lat. 39 degrees 24 minutes 9.8 seconds N. and long. 86 degrees 21 minutes 25.2 seconds W.; NAD 27:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; friable; few fine faint light brownish gray (10YR 6/2) iron depletions throughout; common medium faint very dark brown (10YR 2/2) iron and manganese oxide concretions; neutral; abrupt smooth boundary.

EB—8 to 12 inches; grayish brown (10YR 5/2) silt loam; weak thin platy structure; friable; common fine roots; common medium faint gray (10YR 5/1) and few fine faint light gray (10YR 7/1) iron depletions in the matrix; common fine and medium distinct very dark brown (10YR 2/2) iron and manganese oxide concretions; moderately acid; abrupt wavy boundary.

Bt—12 to 23 inches; yellowish brown (10YR 5/4) silt loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; 15 percent light gray (10YR 7/1) silt loam filling channels; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine distinct very dark brown (10YR 2/2) iron and manganese oxide concretions; very strongly acid; clear wavy boundary.

Btg1—23 to 31 inches; grayish brown (10YR 5/2) silt loam; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many distinct gray (10YR 6/1) clay films on faces of peds; many coarse prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; many coarse distinct very dark brown (10YR 2/2) iron and manganese oxide concretions; very strongly acid; clear wavy boundary.

Btg2—31 to 45 inches; gray (10YR 6/1) silty clay loam; moderate coarse prismatic

structure parting to moderate medium subangular blocky; firm; few fine roots; many distinct gray (10YR 5/1) clay films on faces of peds; many coarse prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; many coarse prominent very dark brown (10YR 2/2) iron and manganese oxide concretions; very strongly acid; abrupt irregular boundary.

2Bt—45 to 74 inches; yellowish brown (10YR 5/4) loam; moderate medium subangular blocky structure; firm; many distinct gray (10YR 6/1) clay films on faces of peds; many fine and medium distinct very dark brown (10YR 2/2) iron and manganese oxide concretions; very strongly acid; clear wavy boundary.

2BC—74 to 80 inches; strong brown (7.5YR 5/6) sandy clay loam; weak coarse subangular blocky structure; firm; strongly acid.

Range in Characteristics

Thickness of the solum: 60 to more than 80 inches
Depth to carbonates: 60 to more than 80 inches
Content of rock fragments: 0 to 14 percent in the 2Bt horizon; 0 to 20 percent in the 2BC horizon

Ap and EB horizons:
Color—hue of 10YR, value of 4 to 6, and chroma of 1 to 3
Texture—silt loam

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 6
Texture—silt loam or silty clay loam

2Bt horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 3 to 6
Texture—loam, clay loam, or sandy clay loam

2BC or 2BCg horizon:
Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 1 to 6
Texture—clay loam, loam, sandy loam, or sandy clay loam or their gravelly analogues

The Taggart soils in Clinton County are considered taxadjuncts to the series because they have fewer redoximorphic depletions in the upper part of the argillic horizon than is typical for the series. This difference, however, does not significantly affect the use and management of the soils. These soils classify as fine-silty, mixed, active, mesic Aquic Hapludalfs.

Thrifton Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Wisconsinan till
Landform: Wisconsinan till plain
Position on the landform: Backslopes
Slope range: 18 to 50 percent
Adjacent soils: Miamian
Taxonomic class: Fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs

Typical Pedon

Thrifton loam in an area of Miamian-Thrifton complex, 25 to 50 percent slopes, eroded; Clinton County, Ohio; about 1.9 miles west of Lumberton, in Liberty Township, about 990 feet east-northeast of the intersection of Hackney Road and New Burlington Road,

along New Burlington Road, 600 feet south; USGS New Burlington topographic quadrangle; lat. 39 degrees 33 minutes 33 seconds N. and long. 83 degrees 53 minutes 08 seconds W.; NAD 27:

A—0 to 4 inches; brown (10YR 4/3) loam, light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure; friable; many fine and few medium roots; 10 percent pebbles; slightly effervescent; slightly alkaline; abrupt wavy boundary.

BCt1—4 to 7 inches; yellowish brown (10YR 5/4) gravelly loam; moderate fine and medium subangular blocky structure; firm; common fine and few medium roots; few faint yellowish brown (10YR 5/4) clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation throughout; few fine distinct very dark grayish brown (10YR 3/2) masses of iron and manganese accumulation throughout; many faint brown (10YR 4/3) organic coatings on faces of peds and in root channels; 15 percent limestone fragments with some shale; strongly effervescent; moderately alkaline; clear wavy boundary.

BCt2—7 to 18 inches; dark yellowish brown (10YR 4/4) gravelly loam; weak medium subangular blocky structure; firm; few fine roots; few faint yellowish brown (10YR 5/4) clay films on faces of peds; few distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine distinct black (10YR 2/1) masses of manganese accumulation throughout; few medium distinct light gray (10YR 7/2) masses of calcium carbonate accumulation throughout in the lower part of horizon; common faint brown (10YR 4/3) organic coatings on vertical faces of peds; 15 percent limestone fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

Cd1—18 to 30 inches; dark yellowish brown (10YR 4/4) gravelly loam; massive in place parting to weak coarse subangular blocky; firm; few fine roots on fracture faces; few distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine distinct black (10YR 2/1) masses of manganese accumulation in seams or partings; few medium distinct light gray (10YR 7/2) masses of calcium carbonate accumulation throughout; 20 percent limestone fragments; strongly effervescent; moderately alkaline; clear smooth boundary.

Cd2—30 to 80 inches; yellowish brown (10YR 5/4) gravelly loam; massive; very firm; few fine roots in fractures; common medium distinct light brownish gray (10YR 6/2) masses of iron depletion in the matrix; common distinct yellowish brown (10YR 5/6) and few distinct yellowish red (5YR 4/6) masses of iron accumulation throughout; few fine distinct black (10YR 2/1) masses of manganese accumulation throughout; few medium distinct light gray (10YR 7/2) masses of calcium carbonate accumulation throughout; 20 percent limestone fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 10 to 20 inches
Depth to carbonates: 0 to 15 inches
Content of rock fragments: 5 to 14 percent in the A horizon; 10 to 20 percent in the BCt horizon; 10 to 20 percent in the C horizon

A horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—loam

BCt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6
Texture—loam or clay loam or their gravelly analogues

Cd horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—loam or gravelly loam

Treaty Series

Depth class: Very deep
Drainage class: Poorly drained
Parent material: Loess and the underlying Wisconsinan till
Landform: Depressions and flats on the Wisconsinan till plain
Slope range: 0 to 1 percent
Adjacent soils: Fincastle, Reesville, and Xenia
Taxonomic class: Fine-silty, mixed, superactive, mesic Typic Argiaquolls

Typical Pedon

Treaty silty clay loam, 0 to 1 percent slopes; Clinton County, Ohio; about 3/4 mile west-northwest of Melvin, in Richland Township, about 2,100 feet southwest of the intersection of Melvin Road and Stone Road, along Stone Road, 350 feet south; USGS Sabina topographic quadrangle; lat. 39 degrees 30 minutes 55 seconds N. and long. 83 degrees 47 minutes 56 seconds W.; NAD 27:

Ap—0 to 8 inches; very dark gray (10YR 3/1) silty clay loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; firm; common fine roots; few prominent brown (7.5YR 4/4) masses of iron and manganese accumulation throughout; neutral; abrupt smooth boundary.

A—8 to 16 inches; very dark gray (10YR 3/1) silty clay loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure; firm; common fine roots; few prominent brown (7.5YR 4/4) masses of iron and manganese accumulation throughout; neutral; clear wavy boundary.

Btg1—16 to 21 inches; dark gray (10YR 4/1) silty clay loam; moderate medium and fine subangular blocky structure; firm; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; common fine faint black (10YR 2/1) manganese concretions throughout; many faint dark gray (10YR 3/1) organic coatings on faces of peds; neutral; clear wavy boundary.

Btg2—21 to 32 inches; gray (10YR 5/1) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium prominent light olive brown (2.5Y 5/4) masses of iron accumulation in the matrix; common fine distinct black (10YR 2/1) manganese concretions throughout; neutral; clear smooth boundary.

Bt—32 to 37 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; common distinct gray (10YR 5/1) clay films on faces of peds; many medium prominent gray (10YR 6/1) iron depletions in the matrix; many fine distinct strong brown (7.5YR 5/8) masses of iron accumulation throughout; common fine prominent black (10YR 2/1) manganese concretions throughout; slightly alkaline; clear wavy boundary.

2BC—37 to 63 inches; yellowish brown (10YR 5/6) silty clay loam; weak coarse subangular blocky structure; firm; few faint gray (10YR 6/1) clay films on faces of peds; many medium prominent gray (10YR 6/1) iron depletions in the matrix; many fine prominent white (10YR 8/1) masses of calcium carbonate accumulation throughout; few pebbles; slightly effervescent; moderately alkaline; clear wavy boundary.

2C—63 to 80 inches; dark yellowish brown (10YR 4/4) loam; massive; very firm; few

fine distinct brown (7.5YR 5/2) iron depletions throughout; 10 percent pebbles; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 65 inches
Thickness of the mollic epipedon: 10 to 18 inches
Thickness of overwash (overwash phase): 8 to 14 inches
Depth to bedrock: More than 80 inches
Depth to carbonates: 30 to 65 inches
Thickness of the loess mantle: 24 to 40 inches
Content of rock fragments: 2 to 10 percent in the 2Bt or 2BC horizon; 5 to 10 percent in the 2C horizon

Ap or A horizon:
Color—hue of 10YR, value of 2 or 3, and chroma of 1 or 2
Texture—silt loam or silty clay loam

Btg or Bt horizon:
Color—hue of 10YR, value of 3 to 5, and chroma of 1 to 6
Texture—silty clay loam

2Bt or 2Btg horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4
Texture—loam, clay loam, or silty clay loam

2BC or 2BCg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 6
Texture—loam, clay loam, or silty clay loam

2C horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 or 4
Texture—loam or fine sandy loam

Wapahani Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Wisconsinan till
Landform: Wisconsinan till plain
Position on the landform: Footslopes and shoulders
Slope range: 6 to 18 percent
Adjacent soils: Losantville and Miamian
Taxonomic class: Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs

Typical Pedon

Wapahani clay loam, 6 to 12 percent slopes; Delaware County, Indiana; about 0.5 mile northwest of Daleville, 2,050 feet west and 2,900 feet south of the northeast corner of sec. 1, T. 19 N., R. 8 E.; USGS Gilman, Indiana topographic quadrangle; lat. 40 degrees 07 minutes 36 seconds N. and long. 85 degrees 33 minutes 52 seconds W.; NAD 27:

Ap—0 to 5 inches; dark yellowish brown (10YR 4/4) clay loam, light yellowish brown (10YR 6/4) dry; weak medium subangular blocky structure; firm; common fine roots; common fine tubular pores; 3 percent rock fragments; neutral; clear smooth boundary.

Bt—5 to 16 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; common fine roots; common fine tubular pores; common distinct dark yellowish brown (10YR 3/4) clay films on faces of peds;

many fine irregular very dark gray (10YR 3/1) masses of iron and manganese accumulation in the matrix; 5 percent rock fragments; neutral; clear smooth boundary.

BC—16 to 20 inches; yellowish brown (10YR 5/4) loam; weak coarse subangular blocky structure; firm; few very fine and fine roots; few very fine and fine tubular pores; few distinct brown (10YR 4/3) clay films on faces of peds; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; many fine irregular very dark gray (10YR 3/1) masses of iron and manganese accumulation in the matrix; 7 percent rock fragments; slightly effervescent; slightly alkaline; clear smooth boundary.

Cd—20 to 80 inches; yellowish brown (10YR 5/4) loam; massive; very firm; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; many fine irregular very dark gray (10YR 3/1) masses of iron and manganese accumulation in the matrix; 8 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 10 to 20 inches
Depth to carbonates: 8 to 18 inches
Depth to dense till: 12 to 24 inches
Content of rock fragments: 0 to 10 percent in the Ap horizon; 0 to 10 percent in the Bt horizon; 1 to 10 percent in the BC horizon; 1 to 10 percent in the Cd horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—clay loam

Bt horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—clay loam or loam

BC horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—clay loam, fine sandy loam, or loam

Cd horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—loam or fine sandy loam

Westboro Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Parent material: Loess and the underlying Illinoian till
Landform: Flats and slight rises on the Illinoian till plain
Position on the landform: Summits
Slope range: 0 to 4 percent
Adjacent soils: Blanchester, Clermont, Jonesboro, and Schaffer
Taxonomic class: Fine-silty, mixed, active, mesic Aeric Epiaqualfs

Typical Pedon

Westboro silt loam, 0 to 2 percent slopes; Brown County, Ohio; about 0.75 mile west-southwest of Shiloh, in Pike Township, about 570 feet east of the junction of Locust Ridge Road and Robinson Road, along Locust Ridge Road, about 750 feet south; USGS Hamersville topographic quadrangle; lat. 38 degrees 59 minutes 13 seconds N. and long. 83 degrees 58 minutes 25 seconds W.; NAD 27:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light gray (10YR 7/2) dry; weak medium subangular blocky structure parting to weak medium granular; very friable; common fine roots; moderately acid; abrupt smooth boundary.

Bt1—8 to 15 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium subangular blocky structure; friable; common fine roots; common distinct brown (7.5YR 4/4) clay films on faces of peds; many medium prominent light brownish gray (10YR 6/2) iron depletions; many prominent light brownish gray (10YR 6/2) clay depletions on faces of peds; common distinct brown (10YR 4/3) organic coatings in root channels and pores; very strongly acid; clear smooth boundary.

E/Bt—15 to 20 inches; pale brown (10YR 6/3) silt loam (E part) and yellowish brown (10YR 5/6) silty clay loam (Bt part); weak medium prismatic structure parting to weak medium subangular blocky; friable; common fine roots; common distinct strong brown (7.5YR 4/6) clay films on faces of peds; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix and on faces of peds; few medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; E horizon material completely surrounds Bt part; very strongly acid; clear wavy boundary.

Bt/Eg—20 to 24 inches; yellowish brown (10YR 5/6) silty clay loam (Bt part) and light brownish gray (10YR 6/2) silt loam (Eg part); weak medium prismatic structure parting to weak medium subangular blocky; friable; common fine roots; common distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; many prominent pale brown (10YR 6/3) clay depletions on faces of peds; common medium faint yellowish brown (10YR 5/6) masses of iron accumulation; 2 percent igneous pebbles; very strongly acid; clear wavy boundary.

B´t—24 to 31 inches; strong brown (7.5YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many prominent gray (10YR 6/1) and common distinct dark yellowish brown (10YR 4/6) clay films on faces of peds; common medium prominent gray (10YR 5/1) iron depletions in the matrix; many prominent light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; common medium distinct yellowish brown (10YR 5/8) masses of iron accumulation; 4 percent igneous pebbles; very strongly acid; clear smooth boundary.

2Bt2—31 to 40 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many prominent light brownish gray (10YR 6/2) and common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common medium prominent gray (10YR 5/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/8) masses of iron accumulation; common fine prominent black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; 4 percent igneous pebbles; very strongly acid; clear smooth boundary.

2Bt3—40 to 49 inches; yellowish brown (10YR 5/6) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; 20 percent brittle in the yellowish brown part; few fine roots; many prominent light brownish gray (10YR 6/2) and common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common medium prominent gray (10YR 5/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/8) masses of iron accumulation; many medium prominent black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; common fine prominent black (10YR 2/1) iron and manganese concretions in the matrix; 5 percent igneous pebbles; moderately acid; clear smooth boundary.

2Bt4—49 to 59 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; firm; 20 percent brittle in the yellowish brown part; few fine roots; many prominent gray (10YR 6/1) clay films on vertical faces of peds;

common prominent light brownish gray (10YR 6/2) and common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; common medium distinct black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; common fine distinct black (10YR 2/1) iron and manganese concretions in the matrix; 5 percent igneous pebbles; neutral; clear smooth boundary.

2Bt5—59 to 69 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many prominent gray (10YR 5/1) clay films on vertical faces of peds; common prominent gray (10YR 5/1) clay films on horizontal faces of peds; common prominent dark yellowish brown (10YR 4/4) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; common medium distinct black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; common fine distinct black (10YR 2/1) iron and manganese concretions in the matrix; 5 percent igneous pebbles; neutral; clear smooth boundary.

2Bt6—69 to 80 inches; yellowish brown (10YR 5/4) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many prominent gray (10YR 5/1) clay films on vertical faces of peds; common prominent gray (10YR 6/1) and few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common coarse distinct yellowish brown (10YR 5/6) masses of iron accumulation; common medium distinct black (10YR 2/1) masses of iron and manganese accumulation on faces of peds; common fine distinct black (10YR 2/1) iron and manganese concretions in the matrix; 6 percent igneous pebbles; slightly alkaline.

Range in Characteristics

Thickness of the solum: More than 80 inches
Depth to carbonates: More than 60 inches
Thickness of the loess mantle: 20 to 40 inches
Content of rock fragments: 0 to 2 percent in the Ap, Bt, and E/Bt horizons; 2 to 10 percent in the 2Bt horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 or 3
Texture—silt loam

Bt horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—silt loam or silty clay loam

E/Bt or Bt/E horizon:
Color—hue of 10YR, value of 5 or 6, and chroma of 2 to 6
Texture—silty clay loam or silt loam

B´t horizon:
Color—hue of 7.5YR, value of 4 or 5, and chroma of 1 to 8
Texture—silty clay loam

2Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 1 to 8
Texture—silty clay loam, loam, or clay loam

Williamsburg Series

Depth class: Very deep
Drainage class: Well drained
Parent material: A thin mantle of loess and stratified Wisconsinan outwash of silty and loamy material with some gravel
Landform: Stream terraces
Position on the landform: Treads
Slope range: 0 to 6 percent
Adjacent soils: Sardinia and Sligo
Taxonomic class: Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Williamsburg silt loam, 2 to 6 percent slopes; Clermont County, Ohio; about 5 miles southeast of Batavia, in Batavia Township, about 1,680 feet east of the intersection of Elklick Road and Williamsburg-Bantam Road, along Williamsburg-Bantam Road, about 5,940 feet north; USGS Batavia topographic quadrangle; lat. 39 degrees 01 minute 10 seconds N. and long. 84 degrees 08 minutes 06 seconds W.; NAD 27:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium and fine subangular blocky structure; friable; slightly acid; abrupt smooth boundary.

E—8 to 12 inches; brown (10YR 5/3) silt loam; weak fine and medium subangular blocky structure; friable; moderately acid; clear wavy boundary.

BE—12 to 16 inches; yellowish brown (10YR 5/4) silt loam; moderate medium and fine subangular blocky structure; friable; many distinct pale brown (10YR 6/3) clay depletions on faces of peds; few fine dark iron and manganese concretions; moderately acid; clear wavy boundary.

Bt1—16 to 22 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few faint brown (7.5YR 4/4) clay films on faces of peds; few faint brown (7.5YR 5/4) clay depletions on faces of peds; common fine dark iron and manganese concretions; very strongly acid; gradual wavy boundary.

2Bt2—22 to 34 inches; brown (7.5YR 4/4) loam; moderate medium subangular blocky structure; firm; common faint brown (7.5YR 4/4) clay films on faces of peds; few faint brown (7.5YR 5/4) clay depletions on faces of some peds; common fine dark iron and manganese concretions; 2 percent fine rounded pebbles; very strongly acid; gradual wavy boundary.

2Bt3—34 to 44 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; common faint brown (7.5YR 5/4) clay films on faces of peds; common faint brown (7.5YR 5/4) clay depletions on faces of peds; common fine dark iron and manganese concretions; 5 percent fine rounded pebbles; very strongly acid; gradual wavy boundary.

2Bt4—44 to 70 inches; brown (7.5YR 4/4) gravelly clay loam; weak coarse subangular blocky structure; firm; many distinct dark brown (7.5YR 3/2) clay films on faces of peds and as coatings on sand grains and pebbles; common fine dark iron and manganese concretions; 25 percent fine pebbles; strongly acid; gradual wavy boundary.

2C—70 to 80 inches; stratified yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/4), and pale brown (10YR 6/3) gravelly loam and gravelly sandy loam with lenses of silt loam and silty clay loam; massive; very friable; 25 percent pebbles; moderately acid in the upper part of horizon and weakly effervescent and slightly alkaline in the lower part.

Range in Characteristics

Thickness of the solum: 60 to 90 inches

Depth to carbonates: 60 to 90 inches
Thickness of the loess mantle: 12 to 24 inches
Content of rock fragments: 0 to 2 percent in the Ap, E, BE, and Bt horizons; 2 to 10 percent in the 2Bt horizon; 2 to 34 percent in the 2C horizon

Ap horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—silt loam

E horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 2 to 4
Texture—silt loam

BE and Bt horizons:
Color—hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6
Texture—silt loam or silty clay loam

2Bt horizon:
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 6
Texture—loam, clay loam, sandy loam, sandy clay, or sandy clay loam

2C horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 2 to 4
Texture—horizon is loam, sandy loam, or sandy clay loam or their gravelly analogues and has thin layers of silt loam, silty clay loam, or loamy coarse sand

Xenia Series

Depth class: Very deep
Drainage class: Moderately well drained
Parent material: Loess and the underlying Wisconsinan till
Landform: Flats and slight rises on the Wisconsinan till plain
Position on the landform: Summits and shoulders
Slope range: 0 to 6 percent
Adjacent soils: Birkbeck, Fincastle, and Russell
Taxonomic class: Fine-silty, mixed, superactive, mesic Aquic Hapludalfs

Typical Pedon

Xenia silt loam, 2 to 6 percent slopes, eroded; Putnam County, Indiana; about 2 miles east of Greencastle, 800 feet south and 2,400 feet east of the northwest corner of sec. 13, T. 14 N., R. 4 W.; USGS Green Castle, Indiana topographic quadrangle; lat. 39 degrees 39 minutes 29.4 seconds N. and long. 86 degrees 48 minutes 16.9 seconds W.; NAD 27:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; many fine pores; slightly acid; abrupt smooth boundary.
Bt1—10 to 18 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; many fine roots; many fine pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; clear wavy boundary.
Bt2—18 to 30 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common medium prominent light brownish gray (10YR 6/2) iron depletions in the matrix; strongly acid; clear wavy boundary.
2Bt3—30 to 50 inches; yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; firm; common distinct dark yellowish brown (10YR 4/4)

clay films on faces of peds; common medium prominent light brownish gray (10YR 6/2) iron depletions in the matrix; 3 percent rock fragments; neutral; clear wavy boundary.

2BC—50 to 58 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; firm; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 3 percent rock fragments; slightly effervescent; moderately alkaline; clear wavy boundary.

2Cd1—58 to 72 inches; yellowish brown (10YR 5/4) loam; massive; very firm; few medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

2Cd2—72 to 80 inches; yellowish brown (10YR 5/4) loam; massive; very firm; few medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to the base of the argillic horizon: 40 to 60 inches
Thickness of the loess or other silty material: 22 to 40 inches
Depth to carbonates: 40 to 60 inches
Content of rock fragments: 0 to 1 percent in the Ap horizon; 0 to 1 percent in the Bt horizon; 2 to 8 percent in the 2Bt horizon; 2 to 8 percent in the 2BC horizon; 2 to 8 percent in the 2C horizon

Ap horizon:
Color—hue of 10YR, value of 4, and chroma of 2 or 3
Texture—silt loam

Bt horizon:
Color—hue of 10YR, value of 4 to 6, and chroma of 3 to 6
Texture—silty clay loam

2Bt horizon:
Color—hue of 10YR, value of 4 or 5, and chroma of 3 to 6
Texture—clay loam or loam

2BC horizon (if it occurs):
Color—hue of 10YR, value of 4 or 5, and chroma of 3 or 4
Texture—clay loam or loam

2Cd horizon:
Color—hue of 10YR, value of 5, and chroma of 3 or 4
Texture—loam or fine sandy loam

The Xenia soils in Clinton County are considered taxadjuncts to the series because they are deeper to redoximorphic depletions than is typical for the series. This difference, however, does not significantly affect the use and management of the soils. These soils classify as fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs.

Formation of the Soils

This section relates the factors of soil formation to the soils in Clinton County and explains the processes of soil formation.

Factors of Soil Formation

A soil is a three-dimensional natural body consisting of mineral and organic material that can support plant growth. The nature of any soil at a given site is the result of the interaction of five general factors—parent material, climate, plants and animals, relief, and time *(19)*. Climate and plants and animals have an effect on parent material that is modified by relief over time. Theoretically, if all these factors were identical at different sites, the soils at these sites would be identical. Differences among the soils are caused by variations in one or more of these factors.

Parent Material

Parent material is the raw material acted on by the soil-forming processes. It largely determines soil texture, which, in turn, affects other properties, such as natural soil drainage and permeability. The physical and chemical composition of the parent material has an important effect on the kind of soil that forms.

The soils in Clinton County formed in many different kinds of parent material. Many of the soils formed in material deposited by the glaciers that covered much of the survey area thousands of years ago or by the meltwater from these glaciers. Other soils formed in loess, which is silty windblown material, or in alluvium, which is material recently deposited by streams.

Glacial till is material that was deposited directly by glacial ice with little or no water action. It typically has particles that vary in size, including sand, silt, and clay and some pebbles, cobblestones, and larger rock fragments. The smaller rock fragments generally are angular. The composition of the till depends on the nature of the area over which the ice passed before the till was deposited. Some of the material was transported great distances by the ice, but most of the till was of local origin. Most of the till in the northern and central parts of the county was deposited during the latest major glaciation, the Wisconsinan Glaciation. Most of the till in the southern parts of the county was deposited during an earlier major glaciation, the Illinoian Glaciation.

The glacial plains in Clinton County are either ground moraines or end moraines. The soils that formed in the deposits of these two types of moraines have different properties, reflecting variations in the method and rate of till deposition.

Till deposits on ground moraines generally are massive, compact, and dense. They make up the nearly level and gently undulating till plains in Clinton County. The soils that formed in this kind of till generally are compact and are slowly permeable or moderately slowly permeable. Celina, Crosby, and Kokomo soils typically formed in till on ground moraines of Wisconsinan age. Rossmoyne and Westboro soils formed in till on ground moraines of Illinoian age.

Till deposits on end moraines can vary more in texture than those on ground moraines. In some areas they are stratified and tend to be less dense. They make up

the moderately rolling bands of ridges that trend in a northwestern direction through the central part of the county. The soils that formed in this kind of till generally are less compact and more permeable than the soils on ground moraines. Crouse and Miamian soils typically formed in till of Wisconsinan age on end moraines. Hickory and Nicely soils formed in till of Illinoian age on end moraines.

Outwash deposits, laid down by moving water, and lacustrine deposits, laid down in still water, are two general kinds of meltwater deposits. The size of the particles that can be carried suspended in water depends on the speed of the moving water. When the water slows to a given speed, the suspended particles that are larger than a given size settle out of the water. Water slows wherever a stream loses grade or flows into a body of still water, such as a lake. At that time, the coarser sand and gravel particles settle near the mouth of the stream and the silt and fine clay particles are carried farther into the lake, where they slowly settle.

The soils that formed in outwash deposits are of minimum extent in Clinton County. They formed in deposits laid down as surging meltwater poured from the glacier, depositing sand and gravel as outwash terraces or outwash plains. The meltwater washed away the smaller particles of silt and clay, leaving behind sand and gravel. The soils that formed in outwash generally are permeable. Outwash of both Wisconsinan age and Illinoian age is deposited in Clinton County.

The amount of natural lime and the proportion of shale, sandstone, limestone, and igneous pebbles in the glacial outwash are determined by the source of the outwash. The Wisconsinan outwash deposits along the major terraces in Clinton County were derived from limestone-influenced glacial drift. Eldean and Ockley soils formed in limy glacial outwash of Wisconsinan age. The older Illinoian outwash is deposited at elevations higher than those of the Wisconsinan outwash. The outwash deposits generally have a mantle of loess. The thickness of the loess on the outwash terraces varies inversely with the slope. The nearly level Taggart soils formed in a thick deposit of loess. The sloping Libre soils formed in thinner deposits of loess, partly because of erosion.

Soils that formed in lacustrine deposits are of relatively minor extent throughout Clinton County, although they are locally extensive in places. They formed in deposits laid down in scattered relict glacial or post-glacial lakes. Secondcreek soils formed in these silty deposits.

Loess is wind-deposited soil material. Soils that formed in loess are of major extent throughout Clinton County, although they dominantly occur in the east-central and north-central parts *(16)*. The loess was deposited as the outwash terraces were forming. Strong winds swept across these open, level terraces, picked up silt particles, and later deposited the particles, commonly on landforms at the higher elevations. Birkbeck and Reesville soils formed mainly in loess that was deposited on the Wisconsinan till plain.

Some areas in the southern part of the county were glaciated, but the glacier had little or no influence on soil morphology, especially on the steeper slopes. Erosion removed most of the till material because of its location on the steep slopes. In areas on the Richmond Formation, Morrisville soils formed in a thin layer of till and in the underlying material weathered from interbedded limestone and clay shale.

Recent alluvium is soil material deposited by floodwater along streams. The texture of the soil material varies, depending on the speed of the floodwater, the duration of flooding, and the distance from the streambank. Soils that formed in recent alluvium can be highly stratified. The soil horizons are weakly expressed because the soil-forming processes are interrupted with each new deposition. The source of the alluvium generally is material eroded from other soils farther upstream in the watershed. Ross, Sligo, Sloan, and Stringley soils formed in slightly acid to calcareous recent alluvium derived from soils that formed in limy Wisconsinan till and outwash.

Climate

The climate in Clinton County has significantly affected the soil-forming processes. Climatic factors, such as precipitation and temperature, have influenced the existing plant and animal communities and the physical and chemical weathering of the parent material.

During the colder glacial epoch, the advancing glaciers spread over the glaciated part of the county and buried the boreal forest and the underlying soils. The cold temperatures in the soil reduced the rate of chemical reactions in the existing soils and in the raw parent material. Increased frost action, resulting from a periglacial climate, caused frost churning in some soils. Strong winds swept across the recently deposited glacial parent material, which was largely devoid of vegetation, and carried away large amounts of silt-sized particles, which were later deposited as loess. When the glacial ice retreated and the climate gradually warmed, deciduous forests eventually succeeded the boreal vegetation *(10)*.

The county currently has a humid, temperate climate, which has persisted for thousands of years. In this environment, physical and chemical weathering of the parent material can occur along with the accumulation of organic matter, the decomposition of minerals, the formation and translocation of clay, the leaching of soluble compounds, and alternating periods of freezing and thawing.

The microclimate in a given area can affect soil formation. Kokomo soils, which are in depressional or low-lying areas, receive runoff from the higher adjacent slopes. The runoff creates a wet microclimate that results in prolonged saturation, the reduction of iron, and a gray subsoil. Sloping soils, such as Miamian soils, formed under a drier microclimate because of runoff. The better external drainage results in better aeration, the oxidation of iron, and a yellowish brown subsoil. Slope aspect, through its effect on the amount of sunlight and heat energy reaching the soil, affects the microclimate, influencing the trees that grow on the soil and the accumulation of organic matter in the soil.

Living Organisms

The vegetation under which a soil forms influences soil properties, such as color, structure, reaction, and content and distribution of organic matter. Vegetation extracts water from the soil, recycles nutrients, and adds organic matter to the soil. Gases derived from root respiration combine with water to form acids that influence the weathering of minerals. Because of a lower content of organic matter, soils that formed under forest vegetation are generally lighter colored than those that formed under grasses.

At the time Clinton County was settled, the native vegetation consisted mainly of hardwood forests. Red oak, white oak, sugar maple, and American beech commonly grew on the better drained soils on the Wisconsinan till plains. Pin oak, shagbark hickory, red maple, American elm, and white ash were common on the wetter soils on these till plains. White oak, red oak, hickory, and dogwood were common on the Illinoian till plains. Water-tolerant reeds and sedges, willow, tamarack, and alder grew in scattered small fens or marshes.

Bacteria, fungi, and many other micro-organisms decompose organic matter and release nutrients to growing plants. They influence the formation of peds. Soil properties, such as drainage, temperature, and reaction, influence the type of micro-organisms that live in the soil. Fungi are generally more active in the more acid soils, while bacteria are more active in the less acid soils.

Earthworms, insects, and small burrowing animals mix the soil and create small channels that influence soil aeration and the percolation of water. Earthworms help to incorporate crop residue or other organic matter into the soil. The organic material

improves tilth. In areas that are well populated with earthworms, the leaf litter that accumulates on the soil in the fall is generally incorporated into the soil by the following spring. If the earthworm population is low, part of the leaf fall can remain on the surface of the soil for several years.

Human activities have significantly influenced soil formation. Native forests have been cleared and developed for farming and other uses. Erosion on sloping soils has been accelerated by cultivation, wet soils have been drained, and manure, lime, chemical fertilizer, and pesticides have been applied in cultivated areas. Cultivation has affected soil structure and compaction and lowered the content of organic matter. The development of land for urban uses or for mining has significantly influenced the soils in some areas.

Relief

Relief influences soil formation mainly through its effect on runoff and erosion. To a lesser extent, it also influences soil temperature, the plant cover, depth to the water table, and the accumulation and removal of organic matter.

Because it causes differences in external soil drainage, relief can differentiate soils that formed in the same kind of parent material. Water that runs off the more sloping soils can collect in depressions or swales. Kokomo and Miamian soils both formed in loamy till. The gently sloping to very steep Miamian soils on knolls and side slopes are well drained. They are in areas where external drainage is good. The nearly level Kokomo soils are very poorly drained. They are in swales or depressions that receive runoff from the higher adjacent soils, such as Miamian soils.

Relief varies very little in Clinton County. On the ground moraines in the eastern part of the county, the soils generally are nearly level and gently sloping. Relief becomes more pronounced in the central part of the county, where gently sloping to moderately steep, dissected end moraines grade to the Illinoian till plain in the southwestern part of the county, where relief is nearly level and gently sloping.

Time

The length of time that the parent material has been exposed to soil-forming processes influences the nature of the soil that forms. The youngest soils in Clinton County, such as Ross, Sligo, Sloan, and Stringley soils, formed in recent alluvium. These soils can be stratified and have weakly expressed horizons because the soil-forming processes are interrupted with each new deposition.

Glaciers advanced over all of the survey area during the Wisconsinan Glaciation and the Illinoian Glaciation, which were possibly as much as 100,000 years apart. Glacial deposits of Wisconsinan age are geologically young; however, enough time has elapsed for the initially raw parent material to weather into soils that have distinct horizons. In most of the soils, including Celina, Crosby, and Miamian soils, carbonates have been leached to a depth of about 2 to 3 feet, clay has been translocated from the A horizon to the B horizon, and organic matter has accumulated in the A horizon.

Glacial deposits of Illinoian age are significantly older than those of Wisconsinan age. The soils that formed in Illinoian glacial drift, such as Jonesboro, Rossmoyne, and Westboro soils, typically are more highly weathered or leached than the soils that formed in Wisconsinan till. Also, they have a thicker solum.

Processes of Soil Formation

Soil forms through complex processes that are grouped into four general categories: additions, removals, transfers, and transformations. These processes affect soil formation, although in differing degrees.

The accumulation of organic matter in the A horizon of the mineral soils in Clinton County is an example of an addition. This accumulation is the main reason for the dark color of the A horizon. The color of the raw parent material is uniform with increasing depth.

The leaching of lime from the upper 2 to 3 feet in many of the soils in the county that formed in till is an example of a removal. The parent material of these soils was initially limy, but the lime has been leached from the upper part of the profile by percolating water.

The translocation of clay from the A horizon to the B horizon in many soils on uplands in the county is an example of a transfer. The A horizon or the E horizon is a zone of eluviation, or loss. The B horizon is a zone of illuviation, or gain. In Celina, Miamian, and other soils, the B horizon has more clay than the parent material and the A horizon has less clay. In the B horizon of some soils, thin clay films are in pores and on faces of peds. This clay has been transferred from the A horizon.

An example of a transformation is the reduction and solubilization of ferrous iron. This process takes place under wet, saturated conditions in which there is no molecular oxygen. Gleying, or the reduction of iron, is evident in Blanchester, Kokomo, and Secondcreek soils, which have a dominantly gray subsoil. The gray color indicates the presence of reduced ferrous iron, which implies wetness. Reduced iron is soluble, but it commonly has moved short distances in the soils in Clinton County, stopping either in the horizon where it originated or in an underlying horizon. Part of this iron can be reoxidized and segregated in the form of stains, concretions, or bright yellow and red mottles.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.
Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.
AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.
Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.
Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.
Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.
Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.
Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.
Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.
Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.
Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.
Aspect. The direction in which a slope faces.
Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.
Backswamp. A flood-plain landform. An extensive, marshy or swampy, depressed area of flood plains between natural levees and valley sides or terraces.
Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.
Basal till. Compact till deposited beneath the ice.
Base saturation. The degree to which material having cation-exchange properties is

saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Beach ridge. A low, essentially continuous mound of beach or beach and dune material heaped up by the action of waves and currents on the backshore of a beach, beyond the present limit of storm waves, and occurring singly or as one of a series of approximately parallel deposits. These ridges define the limits of relict lakes.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Beta horizon. A special type of lower Bt horizon with a significant accumulation of translocated silicate clay between two contrasting parent materials.

Borrow pit. An open excavation from which soil and underlying material have been removed, usually for construction purposes. Typically less than 2 acres in size. Larger areas are mapped as Udorthents.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Bulk density. The mass of a dry soil per unit bulk volume. The bulk volume is determined before drying to a constant weight at 105 degrees C. The value is expressed in grams per cubic centimeter.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between

particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clayey. Containing more than 35 percent clay.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Closed depression. A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and is without a natural outlet for surface drainage.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Compaction. Any process by which the mineral grains of soil are rearranged to decrease void space and bring them into closer contact with one another, thereby increasing the weight of solid material per cubic foot. In agronomy, usually associated with machinery traffic across the soil during farming operations.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse-grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour. An imaginary line on the surface of the earth connecting points of the same elevation.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropland. Land used primarily for the production of adapted cultivated, close-growing crops, fruit, or nut crops for harvest, alone or in association with sod crops.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand

by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delta. A body of alluvium having a surface that is nearly flat and fan shaped; deposited at or near the mouth of a river or stream where it enters a body of relatively still water, generally a sea or lake.

Dense material. A very firm, massive, noncemented, root-restrictive layer (commonly till) that has no cracks or in which the spacing of cracks that roots can enter is 10 centimeters or more. The materials within the survey area have a bulk density of more than 1.8 grams per cubic centimeter.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep soils, 20 to 40 inches; shallow soils, 10 to 20 inches; and very shallow soils, less than 10 inches.

Depth to bedrock (in tables). Bedrock is too near the surface for the specified use.

Depth to dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Dolostone. A term used for the sedimentary rock dolomite in order to avoid confusion with the mineral of the same name. A carbonate sedimentary rock consisting mostly (more than 50 percent by weight) of the mineral dolomite [$CaMg(CO_3)_2$].

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Effervescence. The gaseous response (observed as bubbles) of soil to applied hydrochloric acid (HCl) or other chemicals. A field or laboratory test to determine the presence of carbonates in the soil.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

End moraine. A moraine produced at the front of an actively flowing glacier at any given time.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff, generally produced by erosion or faulting, breaking the general continuity of more gently sloping land surfaces. Exposed nonbedrock material is nonsoil material or very shallow, poorly developed soil. Typically 0.1 acre to 2 acres in size. Synonym: scarp.

Esker. A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Filtering capacity (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very

flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The geomorphic component that forms the inner, gently inclined surface at the base of a hillslope. The surface profile is dominantly concave. In terms of gradational processes, the footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit. An open excavation from which soil and the loose underlying material have been removed and used as a source of sand or gravel, usually for construction purposes.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot. An area in which the surface layer has more than 35 percent, by volume, rock fragments (mostly less than 3 inches in diameter) in an area of surrounding soil that has less than 15 percent rock fragments.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground moraine. An extensive, fairly even layer of till that has an uneven, undulating surface; a deposit of rock and mineral debris dragged along, in, on, and beneath a

glacier and emplaced by processes including basal lodgment and release from downwasting stagnant ice by ablation.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

Head slope. A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the

overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame. An irregular, short ridge or hill of stratified drift.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landfill. An area where waste products of human habitation are disposed. These products can be above or below natural ground level.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Limestone. A sedimentary rock composed of calcium carbonate. There are many impure varieties.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Lithic contact. A boundary between soil and continuous, coherent underlying material. The underlying material must be sufficiently coherent to make hand digging with a spade impractical.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine-grained material, dominantly of silt-sized particles, deposited by the wind.

Longshore bar. A narrow, elongate, coarse textured ridge that once rose near to, or

barely above, a pluvial or glacial lake and extended generally parallel to the shore but was separated from it by an intervening trough or lagoon; both the bar and lagoon are now relict features.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Marsh. A water-saturated, very poorly drained area, intermittently or permanently covered by water. Marsh areas dominantly support sedges, cattails, and rushes. Not used in map units where poorly drained or very poorly drained soils are the named components. Typically 0.5 acre to 2 acres in size.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine. An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Mulch. Any material, such as straw, sawdust, leaves, plastic film, or loose soil, that is spread upon the surface of the soil to protect the soil and plant roots from the effects of raindrops, soil crusting, freezing, and evaporation.
Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.
NAD. North American Datum. NAD is part of a geographic coordinate system that is used to locate points on the earth's surface.
Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.
No-till farming. A method of planting crops that involves no seedbed preparation other than opening the soil for the purpose of placing the seed at the intended depth, which typically involves opening a small slit or punching a hole into the soil. There is usually no cultivation during crop production. Chemical weed control is normally used.
Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.
Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.
Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.
Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.
Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.
Paralithic contact. Similar to a lithic contact, except that the underlying material is softer and can be dug with difficulty with a spade.
Parent material. The unconsolidated organic and mineral material in which soil forms.
Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)
Pebbles. Rounded or partially rounded rock or mineral fragments between 2 and 75 millimeters in diameter.
Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.
Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.
Percolation. The movement of water through the soil.

Perennial water. A natural or manmade lake, pool, pit, or stream course that contains water for most of the year.

Permafrost. Layers of soil, or even bedrock, occurring in arctic or subarctic regions, in which a temperature below freezing has existed continuously for a long time.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Quarry. An open excavation from which bedrock has been removed.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is

neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Restricted permeability (in tables). The slow movement of water through the soil adversely affects the specified use.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Rise. A geomorphic component of flat plains (e.g., lake plain, low coastal plain, low-gradient till plain) consisting of a slightly elevated but low, broad area with slow slope gradients (i.e., slopes of 1 to 3 percent); typically a microfeature but can be fairly extensive. Commonly, soils on a rise are better drained than those in the surrounding flat area.

Riser. The sloping surface of a series of natural steplike landforms, as those of successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of base bedrock, typically hard rock, at the surface of the earth.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that

flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short steep slope. A narrow area in which the soil has slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 6 percent
Strongly sloping	6 to 12 percent
Moderately steep	2 to 20 percent
Steep	20 to 35 percent
Very steep	35 percent and higher

Classes for complex slopes are as follows:

Nearly level	0 to 2 percent
Undulating	2 to 6 percent and 0 to 4 percent
Rolling	6 to 15 percent and 6 to 12 percent
Hilly	12 to 20 percent
Steep	20 to 35 percent
Very steep	35 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Sloughed till. Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on outwash, or on a glaciolacustrine deposit.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of

the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsidence. The loss in volume that occurs in muck soils when they oxidize or dry.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Swamp. An area that is saturated with water throughout much of the year but in which the surface of the soil is generally not deeply submerged. Swamp areas dominantly support trees and shrubs.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine. A belt of thick drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil.

The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till. Unsorted, nonstratified drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Till plain. An extensive area of nearly level to undulating soils underlain by till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat or gently sloping surface of natural steplike landforms, commonly one of a series, such as successive stream terraces.

Typical pedon. The site of the pedon described as typical for the series in the survey area.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Water table. The upper surface of ground water, or the level below which the soil is saturated with water.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth’s surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot. An area of soil that is somewhat poorly drained to very poorly drained and that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1961-90 at Wilmington, Ohio)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	35.1	17.7	26.4	63	-15	2	2.59	1.31	3.70	6	9.0
February-	38.9	20.0	29.4	67	-9	3	2.62	1.19	3.85	6	7.3
March----	50.9	30.3	40.6	78	6	45	4.03	2.37	5.50	8	4.5
April----	62.1	39.3	50.7	84	20	135	4.03	2.26	5.60	8	0.9
May------	72.8	49.2	61.0	90	30	348	4.72	2.42	6.74	8	0.0
June-----	81.1	57.5	69.3	94	41	579	3.76	1.91	5.37	7	0.0
July-----	84.2	61.4	72.8	95	46	707	4.20	2.74	5.52	7	0.0
August---	82.9	59.2	71.1	96	43	653	3.40	2.04	4.61	6	0.0
September	77.1	52.7	64.9	92	34	450	3.19	1.69	4.52	5	0.0
October--	65.3	41.6	53.4	84	21	181	2.80	1.15	4.20	5	0.2
November-	52.0	33.2	42.6	76	13	46	3.54	1.98	4.92	7	2.1
December-	39.8	23.4	31.6	66	-5	9	2.97	1.74	4.06	7	4.1
Yearly:											
Average	61.8	40.5	51.2	---	---	---	---	---	---	---	---
Extreme	101	-25	---	97	-17	---	---	---	---	---	---
Total--	---	---	---	---	---	3,158	41.85	34.29	47.20	80	28.0

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Wilmington, Ohio)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 18	Apr. 30	May 15
2 years in 10 later than--	Apr. 13	Apr. 24	May 10
5 years in 10 later than--	Apr. 3	Apr. 15	Apr. 30
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 18	Oct. 8	Sept. 27
2 years in 10 earlier than--	Oct. 23	Oct. 13	Oct. 2
5 years in 10 earlier than-	Nov. 2	Oct. 23	Oct. 11

Table 3.—Growing Season

(Recorded in the period 1961-90 at Wilmington, Ohio)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	190	168	145
8 years in 10	198	176	151
5 years in 10	212	191	163
2 years in 10	226	206	175
1 year in 10	233	214	181

Table 4.—Acreage and Proportionate Extent of the Map Units

Map symbol	Soil name	Acres	Percent
BhA	Birkbeck silt loam, 0 to 2 percent slopes	927	0.4
BhB	Birkbeck silt loam, 2 to 6 percent slopes	762	0.3
BmA	Blanchester silty clay loam, 0 to 1 percent slopes	6,904	2.6
CaD2	Casco silt loam, 12 to 18 percent slopes, eroded	152	*
CaE2	Casco silt loam, 18 to 50 percent slopes, eroded	142	*
CbB	Celina silt loam, 2 to 6 percent slopes	2,651	1.0
CbB2	Celina silt loam, 2 to 6 percent slopes, eroded	802	0.3
CcA	Celina-Crosby silt loams, 0 to 2 percent slopes	155	*
CeB	Celina-Losantville silt loams, 2 to 6 percent slopes	5,744	2.2
CeB2	Celina-Losantville silt loams, 2 to 6 percent slopes, eroded	1,404	0.5
CmA	Clermont silt loam, 0 to 1 percent slopes	15,011	5.7
CpA	Coblen loam, 0 to 2 percent slopes, rarely flooded	265	0.1
CrB	Corwin silt loam, 2 to 6 percent slopes	13	*
CtA	Crosby-Celina silt loams, 0 to 2 percent slopes	4,338	1.6
CtB	Crosby-Celina silt loams, 2 to 4 percent slopes	6,136	2.3
CuC2	Crouse-Miamian silt loams, 6 to 12 percent slopes, eroded	5,146	2.0
CuD2	Crouse-Miamian silt loams, 12 to 18 percent slopes, eroded	1,044	0.4
DhA	Dunham silt loam, 0 to 2 percent slopes, overwash	475	0.2
DuA	Dunham silty clay loam, 0 to 2 percent slopes	2,508	1.0
EgB	Eldean silt loam, 2 to 6 percent slopes	30	*
EkC2	Eldean gravelly loam, 6 to 12 percent slopes, eroded	5	*
FgA	Fincastle silt loam, 0 to 2 percent slopes	11,176	4.2
FgB	Fincastle silt loam, 2 to 4 percent slopes	13,129	5.0
FnA	Fox silt loam, 0 to 2 percent slopes	155	*
FnB	Fox silt loam, 2 to 6 percent slopes	87	*
FnC2	Fox silt loam, 6 to 12 percent slopes, eroded	101	*
HkD2	Hickory silt loam, 12 to 18 percent slopes, eroded	1,704	0.6
HkE2	Hickory silt loam, 18 to 25 percent slopes, eroded	523	0.2
HkF2	Hickory silt loam, 25 to 35 percent slopes, eroded	641	0.2
HnE2	Hickory-Morrisville silt loams, 18 to 25 percent slopes, eroded	119	*
JrA	Jonesboro-Rossmoyne silt loams, 0 to 2 percent slopes	987	0.4
JrB	Jonesboro-Rossmoyne silt loams, 2 to 6 percent slopes	6,016	2.3
JrC2	Jonesboro-Rossmoyne silt loams, 6 to 12 percent slopes, eroded	3,329	1.3
KnA	Kokomo silt loam, 0 to 1 percent slopes	673	0.3
KoA	Kokomo silty clay loam, 0 to 1 percent slopes	13,680	5.2
LbA	Libre silt loam, 0 to 2 percent slopes	129	*
LbB	Libre silt loam, 2 to 6 percent slopes	437	0.2
LbC2	Libre silt loam, 6 to 12 percent slopes, eroded	297	0.1
LoC2	Loudon silt loam, 6 to 12 percent slopes, eroded	477	0.2
LuA	Lumberton silt loam, 0 to 2 percent slopes	87	*
LuB	Lumberton silt loam, 2 to 6 percent slopes	55	*
LuC2	Lumberton silt loam, 6 to 12 percent slopes, eroded	81	*
LuD2	Lumberton silt loam, 12 to 18 percent slopes, eroded	33	*
LuF2	Lumberton silt loam, 25 to 50 percent slopes, eroded	120	*
MhB2	Miamian silt loam, 2 to 6 percent slopes, eroded	5,186	2.0
MhC2	Miamian silt loam, 6 to 12 percent slopes, eroded	18,408	7.0
MhD2	Miamian silt loam, 12 to 18 percent slopes, eroded	3,026	1.1
MnE2	Miamian-Thrifton complex, 18 to 25 percent slopes, eroded	1,726	0.7
MnF2	Miamian-Thrifton complex, 25 to 50 percent slopes, eroded	2,443	0.9
MoE2	Miamian-Crouse silt loams, 18 to 25 percent slopes, eroded	770	0.3
MoF2	Miamian-Crouse silt loams, 25 to 50 percent slopes, eroded	1,363	0.5
MvD2	Morrisville silty clay loam, 12 to 18 percent slopes, eroded	209	*
MvE2	Morrisville silty clay loam, 18 to 25 percent slopes, eroded	80	*
NhC2	Nicely silt loam, 6 to 12 percent slopes, eroded	545	0.2
OcA	Ockley silt loam, 0 to 2 percent slopes	372	0.1
OcB	Ockley silt loam, 2 to 6 percent slopes	616	0.2
OdA	Ockley silt loam, till substratum, 0 to 2 percent slopes	112	*
OdB	Ockley silt loam, till substratum, 2 to 6 percent slopes	248	*
OdC2	Ockley silt loam, till substratum, 6 to 12 percent slopes, eroded	85	*
OeA	Odell silt loam, 0 to 2 percent slopes	6	*

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Map Units—Continued

Map symbol	Soil name	Acres	Percent
Pg	Pits, gravel	100	*
Pk	Pits, quarry	249	*
RcA	Randolph silt loam, 0 to 2 percent slopes	263	*
ReA	Reesville silt loam, 0 to 2 percent slopes	9,718	3.7
ReB	Reesville silt loam, 2 to 4 percent slopes	999	0.4
RnA	Ross loam, 0 to 1 percent slopes, occasionally flooded	248	*
RoA	Ross silt loam, 0 to 1 percent slopes, frequently flooded	72	*
RsA	Rossburg silt loam, 0 to 2 percent slopes, rarely flooded	263	*
RuB2	Russell-Xenia silt loams, 2 to 6 percent slopes, eroded	3,739	1.4
SaA	Sardinia silt loam, 0 to 2 percent slopes	288	0.1
SaB	Sardinia silt loam, 2 to 6 percent slopes	205	*
ScA	Secondcreek silt loam, 0 to 1 percent slopes, overwash	286	0.1
SeA	Secondcreek silty clay loam, 0 to 1 percent slopes	2,249	0.9
ShA	Shoals silt loam, 0 to 1 percent slopes, occasionally flooded	93	*
SmA	Sligo silt loam, 0 to 1 percent slopes, occasionally flooded	2,537	1.0
SnA	Sloan silt loam, sandy substratum, 0 to 1 percent slopes, occasionally flooded	5,873	2.2
SrA	Stringley-Sligo loams, 0 to 2 percent slopes, occasionally flooded	2,359	0.9
TaA	Taggart silt loam, 0 to 2 percent slopes	137	*
TpA	Treaty silt loam, 0 to 1 percent slopes, overwash	2,945	1.1
TrA	Treaty silty clay loam, 0 to 1 percent slopes	29,599	11.2
Ud	Udorthents, loamy	296	0.1
W	Water	1,300	0.5
WaC3	Wapahani-Miamian clay loams, 6 to 12 percent slopes, severely eroded	439	0.2
WaD3	Wapahani-Miamian clay loams, 12 to 18 percent slopes, severely eroded	411	0.2
WcA	Westboro-Schaffer silt loams, 0 to 2 percent slopes	17,273	6.5
WcB	Westboro-Schaffer silt loams, 2 to 4 percent slopes	1,742	0.7
WmA	Williamsburg silt loam, 0 to 2 percent slopes	171	*
WmB	Williamsburg silt loam, 2 to 6 percent slopes	95	*
XaA	Xenia silt loam, 0 to 2 percent slopes	988	0.4
XaB	Xenia silt loam, 2 to 6 percent slopes	24,751	9.4
XaB2	Xenia silt loam, 2 to 6 percent slopes, eroded	10,352	3.9
	Total	263,885	100.0

* Less than 0.1 percent.

Table 5.—Cropland Limitations and Hazards

(See text for a description of the limitations and hazards listed in this table. Only soils suitable for cultivated crops are listed)

Soil name and map symbol	Cropland limitations and hazards
BhA:	
Birkbeck	Surface compaction, moderate potential for ground-water pollution, frost action, surface crusting
BhB:	
Birkbeck	Surface compaction, moderate potential for ground-water pollution, frost action, surface crusting, erosion hazard
BmA:	
Blanchester	Ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth, surface crusting
CaD2:	
Casco	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity
CbB:	
Celina	Surface compaction, frost action, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer
CbB2:	
Celina	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer
CcA:	
Celina	Surface compaction, frost action, surface crusting, restricted permeability, root-restrictive layer
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, limited available water capacity, restricted permeability, root-restrictive layer, high clay content
CeB:	
Celina	Surface compaction, frost action, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer
Losantville	Seasonal high water table, surface compaction, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer, high clay content
CeB2:	
Celina	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer
Losantville	Part of the surface layer removed by erosion, seasonal high water table, surface compaction, fair tilth, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer, high clay content

Table 5.—Cropland Limitations and Hazards—Continued

Soil name and map symbol	Cropland limitations and hazards
CmA:	
Clermont	Ponding, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting, restricted permeability
CpA:	
Coblen	Moderate potential for ground-water pollution, frost action
CrB:	
Corwin	Surface compaction, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer
CtA:	
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, limited available water capacity, restricted permeability, root-restrictive layer, high clay content
Celina	Surface compaction, frost action, surface crusting, limited available water capacity, restricted permeability, root-restrictive layer
CtB:	
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer, high clay content
Celina	Surface compaction, frost action, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer
CuC2:	
Crouse	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content
CuD2:	
Crouse	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, root-restrictive layer, high clay content
DhA:	
Dunham	Ponding, surface compaction, high potential for ground-water pollution, frost action
DuA:	
Dunham	Ponding, surface compaction, high potential for ground-water pollution, frost action, fair tilth
EgB:	
Eldean	Surface compaction, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity, high clay content

Table 5.—Cropland Limitations and Hazards—Continued

Soil name and map symbol	Cropland limitations and hazards
EkC2:	
Eldean	Part of the surface layer removed by erosion, high potential for ground-water pollution, easily eroded, erosion hazard, limited available water capacity, high clay content
FgA:	
Fincastle	Seasonal high water table, surface compaction, frost action, surface crusting
FgB:	
Fincastle	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard
FnA:	
Fox	Surface compaction, high potential for ground-water pollution, surface crusting, limited available water capacity
FnB:	
Fox	Surface compaction, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity
FnC2:	
Fox	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity
HkD2:	
Hickory	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard
JrA:	
Jonesboro	Surface compaction, frost action, surface crusting, high clay content
Rossmoyne	Surface compaction, frost action, surface crusting, limited available water capacity, root-restrictive layer
JrB:	
Jonesboro	Surface compaction, frost action, surface crusting, erosion hazard, high clay content
Rossmoyne	Surface compaction, frost action, surface crusting, erosion hazard, limited available water capacity, root-restrictive layer
JrC2:	
Jonesboro	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content
Rossmoyne	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, root-restrictive layer
KnA:	
Kokomo	Ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action, high clay content
KoA:	
Kokomo	Ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth, high clay content

Table 5.—Cropland Limitations and Hazards—Continued

Soil name and map symbol	Cropland limitations and hazards
LbA:	
Libre	Surface compaction, frost action, surface crusting
LbB:	
Libre	Surface compaction, frost action, surface crusting, erosion hazard
LbC2:	
Libre	Part of the surface layer removed by erosion, surface compaction, poor tilth, frost action, surface crusting, easily eroded, erosion hazard
LoC2:	
Loudon	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content
LuA:	
Lumberton	Surface compaction, frost action, surface crusting
LuB:	
Lumberton	Surface compaction, frost action, surface crusting, erosion hazard
LuC2:	
Lumberton	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity
LuD2:	
Lumberton	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard
MhB2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, erosion hazard, limited available water capacity, root-restrictive layer, high clay content
MhC2, MhD2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, root-restrictive layer, high clay content
MvD2, MvE2:	
Morrisville	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content
NhC2:	
Nicely	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard
OcA:	
Ockley	Surface compaction, high potential for ground-water pollution, surface crusting
OcB:	
Ockley	Surface compaction, high potential for ground-water pollution, surface crusting, erosion hazard
OdA:	
Ockley	Surface compaction, surface crusting

Table 5.—Cropland Limitations and Hazards—Continued

Soil name and map symbol	Cropland limitations and hazards
OdB:	
Ockley	Surface compaction, surface crusting, erosion hazard
OdC2:	
Ockley	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard
OeA:	
Odell	Seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting
RcA:	
Randolph	Seasonal high water table, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, surface crusting
ReA:	
Reesville	Seasonal high water table, surface compaction, frost action, surface crusting
ReB:	
Reesville	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard
RnA:	
Ross	Occasional flooding
RoA:	
Ross	Frequent flooding, surface compaction
RsA:	
Rossburg	Surface compaction, moderate potential for ground-water pollution
RuB2:	
Russell	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, erosion hazard
Xenia	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, erosion hazard
SaA:	
Sardinia	Surface compaction, frost action, surface crusting
SaB:	
Sardinia	Surface compaction, frost action, surface crusting, erosion hazard
ScA:	
Secondcreek	Ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting, high clay content
SeA:	
Secondcreek	Ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth, surface crusting, high clay content
ShA:	
Shoals	Occasional flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting

Table 5.—Cropland Limitations and Hazards—Continued

Soil name and map symbol	Cropland limitations and hazards
SmA:	
Sligo	Occasional flooding, high potential for ground-water pollution
SnA:	
Sloan	Occasional flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action
SrA:	
Stringley	Occasional flooding, high potential for ground-water pollution
Sligo	Occasional flooding, high potential for ground-water pollution
TaA:	
Taggart	Seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting
TpA:	
Treaty	Ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action
TrA:	
Treaty	Ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth
WaC3, WaD3:	
Wapahani	Most of the surface layer removed by erosion, seasonal high water table, surface compaction, poor tilth, easily eroded, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer
Miamian	Most of the surface layer removed by erosion, surface compaction, fair tilth, easily eroded, erosion hazard, limited available water capacity, root-restrictive layer, high clay content
WcA:	
Westboro	Seasonal high water table, surface compaction, frost action, surface crusting
Schaffer	Seasonal high water table, surface compaction, frost action, surface crusting, limited available water capacity, restricted permeability, root-restrictive layer
WcB:	
Westboro	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard
Schaffer	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard, limited available water capacity, restricted permeability, root-restrictive layer
WmA:	
Williamsburg	Surface compaction, surface crusting
WmB:	
Williamsburg	Surface compaction, surface crusting, erosion hazard
XaA:	
Xenia	Surface compaction, frost action, surface crusting

Table 5.—Cropland Limitations and Hazards—Continued

Soil name and map symbol	Cropland limitations and hazards
XaB:	
Xenia	Surface compaction, frost action, surface crusting, erosion hazard
XaB2:	
Xenia	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, erosion hazard

Table 6.—Suitability Groups and Yields per Acre of Pasture and Hayland

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Pasture and hayland suitability group	Kentucky bluegrass	Tall fescue	Orchardgrass-alfalfa hay	Orchardgrass-red clover hay
		AUM	AUM	Tons	Tons
BhA, BhB:		3.6	5.6	5.4	5.0
Birkbeck	A-6				
BmA:		3.4	7.0	5.0	5.0
Blanchester	C-1				
CaD2:		2.1	3.0	3.0	3.0
Casco	B-1				
CaE2:		1.3	2.4	2.4	2.4
Casco	B-2				
CbB:		3.6	5.6	5.4	4.5
Celina	A-6				
CbB2:		3.5	5.4	5.1	4.2
Celina	A-6				
CcA:		3.6	5.6	5.4	4.5
Celina	A-6				
Crosby	C-2				
CeB:		3.6	5.6	5.4	4.5
Celina	A-6				
Losantville	B-1				
CeB2:		3.5	5.4	5.3	4.2
Celina	A-6				
Losantville	B-1				
CmA:		3.6	7.6	5.2	3.5
Clermont	C-2				
CpA:		5.5	7.0	5.5	5.5
Coblen	A-6				
CrB:		3.6	6.0	5.0	4.0
Corwin	B-1				
CtA, CtB:		3.6	5.6	5.4	4.0
Crosby	C-2				
Celina	A-6				
CuC2:		3.6	5.6	6.0	4.5
Crouse	A-6				
Miamian	A-1				
CuD2:		3.2	5.0	4.5	4.0
Crouse	A-6				
Miamian	A-1				
DhA, DuA:		4.3	6.3	4.0	5.3
Dunham	C-1				

Table 6.—Suitability Groups and Yields per Acre of Pasture and Hayland—Continued

Map symbol and soil name	Pasture and hayland suitability group	Kentucky bluegrass	Tall fescue	Orchardgrass-alfalfa hay	Orchardgrass-red clover hay
		AUM	AUM	Tons	Tons
EgB:		4.0	5.6	4.5	4.0
Eldean	B-1				
EkC2:		3.5	5.3	4.0	3.0
Eldean	B-1				
FgA, FgB:		4.3	6.2	5.0	4.3
Fincastle	C-1				
FnA, FnB:		3.6	5.6	5.7	4.0
Fox	A-1				
FnC2:		3.4	5.6	5.7	3.5
Fox	A-1				
HkD2:		3.6	5.6	2.5	3.0
Hickory	A-1				
HkE2:		3.0	4.0	2.0	2.5
Hickory	A-2				
HkF2:		2.0	2.0	---	---
Hickory	A-3				
HnE2:		3.0	4.0	2.0	2.5
Hickory	A-2				
Morrisville	B-1				
JrA, JrB:		3.6	5.6	5.0	4.5
Jonesboro	A-6				
Rossmoyne	F-3				
JrC2:		3.4	5.3	4.6	4.0
Jonesboro	A-6				
Rossmoyne	F-3				
KnA, KoA:		4.1	6.2	4.4	5.0
Kokomo	C-1				
LbA, LbB:		4.1	5.6	6.0	5.0
Libre	A-6				
LbC2:		3.3	5.0	5.5	4.5
Libre	A-6				
LoC2:		3.2	5.0	3.7	3.5
Loudon	A-6				
LuA, LuB:		3.6	5.6	5.0	4.0
Lumberton	A-6				
LuC2:		3.6	5.6	5.0	3.5
Lumberton	A-6				
LuD2:		3.2	5.1	4.0	3.0
Lumberton	A-6				
LuF2:		2.0	2.5	---	---
Lumberton	F-2				

Table 6.—Suitability Groups and Yields per Acre of Pasture and Hayland—Continued

Map symbol and soil name	Pasture and hayland suitability group	Kentucky bluegrass	Tall fescue	Orchardgrass-alfalfa hay	Orchardgrass-red clover hay
		AUM	AUM	Tons	Tons
MhB2:		3.4	5.4	4.3	4.0
Miamian-------------	A-1				
MhC2:		3.0	5.0	4.0	4.0
Miamian-------------	A-1				
MhD2:		3.0	5.0	4.0	3.5
Miamian-------------	A-1				
MnE2:		1.3	2.0	3.0	2.0
Miamian-------------	A-2				
Thrifton------------	A-2				
MnF2:		1.0	2.0	---	---
Miamian-------------	A-3				
Thrifton------------	A-3				
MoE2:		1.5	2.0	3.0	2.0
Miamian-------------	A-2				
Crouse--------------	A-2				
MoF2:		1.0	2.0	---	---
Miamian-------------	A-3				
Crouse--------------	A-3				
MvD2:		3.0	5.0	4.0	3.0
Morrisville---------	B-1				
MvE2:		1.3	2.0	2.0	2.5
Morrisville---------	B-1				
NhC2:		3.0	4.5	3.2	4.5
Nicely--------------	A-1				
OcA, OcB, OdA:		4.2	7.2	3.6	4.5
Ockley--------------	A-1				
OdB:		4.0	6.8	3.4	4.5
Ockley--------------	A-1				
OdC2:		3.6	6.2	3.1	4.0
Ockley--------------	A-1				
OeA:		3.6	6.0	5.0	4.5
Odell---------------	C-1				
Pg.					
Pits, gravel					
Pk.					
Pits, quarry					
RcA:		3.6	5.6	3.4	4.0
Randolph------------	C-2				
ReA:		3.6	5.6	5.4	5.0
Reesville-----------	C-1				
ReB:		3.6	5.6	5.4	4.5
Reesville-----------	C-1				

Table 6.—Suitability Groups and Yields per Acre of Pasture and Hayland—Continued

Map symbol and soil name	Pasture and hayland suitability group	Kentucky bluegrass	Tall fescue	Orchardgrass-alfalfa hay	Orchardgrass-red clover hay
		AUM	AUM	Tons	Tons
RnA:		3.6	5.6	5.6	5.0
Ross	A-5				
RoA:		3.6	5.6	5.6	4.5
Ross	A-5				
RsA:		3.6	5.6	6.5	5.0
Rossburg	A-1				
RuB2:		4.3	6.2	5.0	3.8
Russell	A-6				
Xenia	A-6				
SaA:		3.6	5.6	5.4	5.0
Sardinia	A-6				
SaB:		3.6	5.6	5.0	5.0
Sardinia	A-6				
ScA, SeA:		3.6	6.0	5.0	5.0
Secondcreek	C-1				
ShA:		5.6	8.2	4.1	5.0
Shoals	C-3				
SmA:		4.4	7.0	3.8	5.0
Sligo	A-5				
SnA:		4.3	6.0	5.0	3.8
Sloan	C-3				
SrA:		3.0	5.5	3.5	4.0
Stringley	A-5				
Sligo	A-5				
TaA:		4.2	6.0	5.0	4.4
Taggart	C-1				
TpA, TrA:		4.5	8.2	5.4	5.0
Treaty	C-1				
Ud.					.
Udorthents					
W.					
Water					
WaC3:		3.4	5.3	4.2	3.7
Wapahani	B-1				
Miamian	A-1				
WaD3:		3.0	5.0	4.0	3.0
Wapahani	B-1				
Miamian	A-1				
WcA, WcB:		4.3	6.0	5.0	4.0
Westboro	C-1				
Schaffer	C-2				

Table 6.—Suitability Groups and Yields per Acre of Pasture and Hayland—Continued

Map symbol and soil name	Pasture and hayland suitability group	Kentucky bluegrass	Tall fescue	Orchardgrass-alfalfa hay	Orchardgrass-red clover hay
		AUM	AUM	Tons	Tons
WmA, WmB:		3.6	6.0	4.5	5.0
Williamsburg--------	A-1				
XaA:		4.2	6.0	4.0	4.5
Xenia---------------	A-6				
XaB:		4.0	6.0	4.0	4.5
Xenia---------------	A-6				
XaB2:		3.6	5.6	3.8	4.5
Xenia---------------	A-6				

Table 7.—Crop Yield Index

(This table is based on yields from the years 1992-2000. Estimated yields for soils with a yield index of 100 are: corn, 175 bushels; soybeans, 60 bushels; and wheat, 75 bushels. Refer to the text for more information on how this table was developed and for instructions on converting yield index numbers to estimated yields. Absence of a yield index indicates that the soil is not suited to the crop or the crop is generally not grown on the soil. Only the map units suited to production of the these crops are listed)

Map symbol and soil name	Corn	Soybeans	Winter wheat
BhA---------------------- Birkbeck	86	92	100
BhB---------------------- Birkbeck	83	87	100
BmA---------------------- Blanchester	86	92	69
CaD2--------------------- Casco	37	50	60
CbB---------------------- Celina	77	80	93
CbB2--------------------- Celina	74	75	91
CcA---------------------- Celina-Crosby	80	80	93
CeB---------------------- Celina-Losantville	77	77	89
CeB2--------------------- Celina-Losantville	71	70	85
CmA---------------------- Clermont	74	58	73
CpA---------------------- Coblen	91	83	93
CrB---------------------- Corwin	77	75	93
CtA---------------------- Crosby-Celina	77	75	93
CtB---------------------- Crosby-Celina	74	70	93
CuC2--------------------- Crouse-Miamian	60	50	67
CuD2--------------------- Crouse-Miamian	51	43	60
DhA, DuA----------------- Dunham	94	90	87

Table 7.—Crop Yield Index—Continued

Map symbol and soil name	Corn	Soybeans	Winter wheat
EgB: Eldean	71	75	87
EkC2: Eldean	63	67	80
FgA: Fincastle	83	92	93
FgB: Fincastle	80	92	93
FnA: Fox	74	83	87
FnB: Fox	74	78	87
FnC2: Fox	66	75	80
HkD2: Hickory	43	50	60
JrA: Jonesboro-Rossmoyne	74	75	80
JrB: Jonesboro-Rossmoyne	71	70	80
JrC2: Jonesboro-Rossmoyne	66	58	73
KnA, KoA: Kokomo	99	78	87
LbA: Libre	80	70	73
LbB: Libre	74	70	73
LbC2: Libre	66	63	53
LoC2: Loudon	51	57	53
LuA: Lumberton	71	67	67
LuB: Lumberton	69	58	60
LuC2: Lumberton	51	50	53
LuD2: Lumberton	46	42	60
MhB2: Miamian	63	57	67

Table 7.—Crop Yield Index—Continued

Map symbol and soil name	Corn	Soybeans	Winter wheat
MhC2 Miamian	51	50	60
MhD2 Miamian	46	50	60
MvD2 Morrisville	40	42	47
NhC2 Nicely	45	42	40
OcA Ockley	80	63	67
OcB Ockley	74	63	67
OdA Ockley	80	63	67
OdB Ockley	74	62	67
OdC2 Ockley	69	55	60
OeA Odell	91	77	77
RcA Randolph	69	63	53
ReA Reesville	83	70	80
ReB Reesville	80	67	73
RnA Ross	91	73	---
RoA Ross	86	67	---
RsA Rossburg	86	70	73
RuB2 Russell-Xenia	74	67	67
SaA Sardinia	74	67	67
SaB Sardinia	69	67	67
ScA, SeA Secondcreek	80	75	73
ShA Shoals	80	73	---

Table 7.—Crop Yield Index—Continued

Map symbol and soil name	Corn	Soybeans	Winter wheat
SmA---------------------- Sligo	69	68	---
SnA---------------------- Sloan	86	70	---
SrA---------------------- Stringley-Sligo	74	75	---
TaA---------------------- Taggart	74	78	72
TpA, TrA----------------- Treaty	100	100	91
WaC3--------------------- Wapahani-Miamian	46	47	43
WaD3--------------------- Wapahani-Miamian	34	35	32
WcA---------------------- Westboro-Schaffer	80	67	80
WcB---------------------- Westboro-Schaffer	80	67	73
WmA---------------------- Williamsburg	86	67	73
WmB---------------------- Williamsburg	80	67	73
XaA---------------------- Xenia	80	70	67
XaB---------------------- Xenia	77	70	73
XaB2--------------------- Xenia	74	67	71

Table 8.—Acreage by Capability Classes and Subclasses

Capability class	Capability subclass	Acreage
Unclassified	---	1,946
1	---	3,471
2	e	85,259
	w	101,537
	s	155
3	e	30,198
	w	28,070
4	e	4,754
6	e	3,783
7	e	4,712

Table 9.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
BhA	Birkbeck silt loam, 0 to 2 percent slopes
BhB	Birkbeck silt loam, 2 to 6 percent slopes
BmA	Blanchester silty clay loam, 0 to 1 percent slopes (if drained)
CbB	Celina silt loam, 2 to 6 percent slopes
CbB2	Celina silt loam, 2 to 6 percent slopes, eroded
CcA	Celina-Crosby silt loams, 0 to 2 percent slopes
CeB	Celina-Losantville silt loams, 2 to 6 percent slopes
CeB2	Celina-Losantville silt loams, 2 to 6 percent slopes, eroded
CpA	Coblen loam, 0 to 2 percent slopes, rarely flooded
CrB	Corwin silt loam, 2 to 6 percent slopes
CtA	Crosby-Celina silt loams, 0 to 2 percent slopes (if drained)
CtB	Crosby-Celina silt loams, 2 to 4 percent slopes (if drained)
DhA	Dunham silt loam, 0 to 2 percent slopes, overwash (if drained)
DuA	Dunham silty clay loam, 0 to 2 percent slopes (if drained)
EgB	Eldean silt loam, 2 to 6 percent slopes
FgA	Fincastle silt loam, 0 to 2 percent slopes (if drained)
FgB	Fincastle silt loam, 2 to 4 percent slopes (if drained)
FnA	Fox silt loam, 0 to 2 percent slopes
FnB	Fox silt loam, 2 to 6 percent slopes
JrA	Jonesboro-Rossmoyne silt loams, 0 to 2 percent slopes
JrB	Jonesboro-Rossmoyne silt loams, 2 to 6 percent slopes
KnA	Kokomo silt loam, 0 to 1 percent slopes (if drained)
KoA	Kokomo silty clay loam, 0 to 1 percent slopes (if drained)
LbA	Libre silt loam, 0 to 2 percent slopes
LbB	Libre silt loam, 2 to 6 percent slopes
LuA	Lumberton silt loam, 0 to 2 percent slopes
LuB	Lumberton silt loam, 2 to 6 percent slopes
MhB2	Miamian silt loam, 2 to 6 percent slopes, eroded
OcA	Ockley silt loam, 0 to 2 percent slopes
OcB	Ockley silt loam, 2 to 6 percent slopes
OdA	Ockley silt loam, till substratum, 0 to 2 percent slopes
OdB	Ockley silt loam, till substratum, 2 to 6 percent slopes
OeA	Odell silt loam, 0 to 2 percent slopes (if drained)
RcA	Randolph silt loam, 0 to 2 percent slopes (if drained)
ReA	Reesville silt loam, 0 to 2 percent slopes (if drained)
ReB	Reesville silt loam, 2 to 4 percent slopes (if drained)
RnA	Ross loam, 0 to 1 percent slopes, occasionally flooded
RoA	Ross silt loam, 0 to 1 percent slopes, frequently flooded (if protected from flooding or not frequently flooded during the growing season)
RsA	Rossburg silt loam, 0 to 2 percent slopes, rarely flooded
RuB2	Russell-Xenia silt loams, 2 to 6 percent slopes, eroded
SaA	Sardinia silt loam, 0 to 2 percent slopes
SaB	Sardinia silt loam, 2 to 6 percent slopes
ScA	Secondcreek silt loam, 0 to 1 percent slopes, overwash (if drained)
SeA	Secondcreek silty clay loam, 0 to 1 percent slopes (if drained)
ShA	Shoals silt loam, 0 to 1 percent slopes, occasionally flooded (if drained)
SmA	Sligo silt loam, 0 to 1 percent slopes, occasionally flooded
SnA	Sloan silt loam, sandy substratum, 0 to 1 percent slopes, occasionally flooded (if drained)
SrA	Stringley-Sligo loams, 0 to 2 percent slopes, occasionally flooded
TaA	Taggart silt loam, 0 to 2 percent slopes (if drained)
TpA	Treaty silt loam, 0 to 1 percent slopes, overwash (if drained)
TrA	Treaty silty clay loam, 0 to 1 percent slopes (if drained)
WcA	Westboro-Schaffer silt loams, 0 to 2 percent slopes (if drained)
WcB	Westboro-Schaffer silt loams, 2 to 4 percent slopes (if drained)
WmA	Williamsburg silt loam, 0 to 2 percent slopes

Table 9.—Prime Farmland—Continued

Map symbol	Soil name
WmB	Williamsburg silt loam, 2 to 6 percent slopes
XaA	Xenia silt loam, 0 to 2 percent slopes
XaB	Xenia silt loam, 2 to 6 percent slopes
XaB2	Xenia silt loam, 2 to 6 percent slopes, eroded

Table 10.—Hydric Soils

Map symbol	Soil name
BmA	Blanchester silty clay loam, 0 to 1 percent slopes
CmA	Clermont silt loam, 0 to 1 percent slopes
DhA	Dunham silt loam, 0 to 2 percent slopes, overwash
DuA	Dunham silty clay loam, 0 to 2 percent slopes
KnA	Kokomo silt loam, 0 to 1 percent slopes
KoA	Kokomo silty clay loam, 0 to 1 percent slopes
ScA	Secondcreek silt loam, 0 to 1 percent slopes, overwash
SeA	Secondcreek silty clay loam, 0 to 1 percent slopes
SnA	Sloan silt loam, sandy substratum, 0 to 1 percent slopes, occasionally flooded
TpA	Treaty silt loam, 0 to 1 percent slopes, overwash
TrA	Treaty silty clay loam, 0 to 1 percent slopes

Table 11.—Non-Hydric Map Units With Hydric Components

Map unit symbol and name	Hydric component	Landform
BhA:		
Birkbeck silt loam, 0 to 2 percent slopes	Treaty	depression, till plain
BhB:		
Birkbeck silt loam, 2 to 6 percent slopes	Treaty	depression, till plain
CcA:		
Celina-Crosby silt loams, 0 to 2 percent slopes	Kokomo	depression, till plain
CrB:		
Corwin silt loam, 2 to 6 percent slopes	Kokomo	depression, till plain
CtA:		
Crosby-Celina silt loams, 0 to 2 percent slopes	Kokomo	depression, till plain
FgA:		
Fincastle silt loam, 0 to 2 percent slopes	Treaty	depression, till plain
FgB:		
Fincastle silt loam, 2 to 4 percent slopes	Treaty	depression, till plain
JrA:		
Jonesboro-Rossmoyne silt loams, 0 to 2 percent slopes	Clermont	depression, till plain
RcA:		
Randolph silt loam, 0 to 2 percent slopes	Sloan	depression, flood plain
ReA:		
Reesville silt loam, 0 to 2 percent slopes	Treaty	depression, till plain
ReB:		
Reesville silt loam, 2 to 4 percent slopes	Treaty	depression, till plain
RnA:		
Ross loam, 0 to 1 percent slopes, occasionally flooded	Sloan	depression, flood plain
RoA:		
Ross silt loam, 0 to 1 percent slopes, frequently flooded	Sloan	depression, flood plain
RsA:		
Rossburg silt loam, 0 to 2 percent slopes, rarely flooded	Sloan	depression, flood plain
ShA:		
Shoals silt loam, 0 to 1 percent slopes, occasionally flooded	Sloan	depression, flood plain
SmA:		
Sligo silt loam, 0 to 1 percent slopes, occasionally flooded	Sloan	depression, flood plain
SrA:		
Stringley-Sligo loams, 0 to 2 percent slopes, occasionally flooded	Sloan	depression, flood plain
WcA:		
Westboro-Schaffer silt loams, 0 to 2 percent slopes	Clermont	depression, till plain

Table 11.—Non-Hydric Map Units With Hydric Components—Continued

Map unit symbol and name	Hydric component	Landform
XaA:		
Xenia silt loam, 0 to 2 percent slopes	Treaty	depression, till plain
XaB:		
Xenia silt loam, 2 to 6 percent slopes	Treaty	depression, till plain

Table 12.—Woodland Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BhA:						
Birkbeck	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
BhB:						
Birkbeck	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
BmA:						
Blanchester	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
CaD2:						
Casco	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
CaE2:						
Casco	Moderate		Low		Severe	
	Water erosion	0.58			Low strength	1.00
CbB, CbB2:						
Celina	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
CcA:						
Celina	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
Crosby	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
CeB, CeB2:						
Celina	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
Losantville	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
CmA:						
Clermont	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
CpA:						
Coblen	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
CrB:						
Corwin	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00

Table 12.—Woodland Management, Part I—Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
CtA:						
Crosby	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
Celina	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
CtB:						
Crosby	Slight		High		Severe	
	Water erosion	0.07	Wetness	1.00	Low strength	1.00
Celina	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
CuC2:						
Crouse	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
Miamian	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
CuD2:						
Crouse	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
Miamian	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
DhA, DuA:						
Dunham	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
EgB:						
Eldean	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
EkC2:						
Eldean	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00
FgA:						
Fincastle	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
FgB:						
Fincastle	Slight		High		Severe	
	Water erosion	0.07	Wetness	1.00	Low strength	1.00
FnA:						
Fox	Slight		Moderate		Severe	
	Water erosion	0.02	Carbonate content	0.50	Low strength	1.00
FnB:						
Fox	Slight		Moderate		Severe	
	Water erosion	0.10	Carbonate content	0.50	Low strength	1.00
FnC2:						
Fox	Slight		Moderate		Severe	
	Water erosion	0.22	Carbonate content	0.50	Low strength	1.00

Table 12.—Woodland Management, Part I—Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
HkD2:						
Hickory	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
HkE2:						
Hickory	Moderate		Low		Severe	
	Water erosion	0.54			Low strength	1.00
HkF2:						
Hickory	Severe		Low		Severe	
	Water erosion	0.73			Low strength	1.00
HnE2:						
Hickory	Moderate		Low		Severe	
	Water erosion	0.54			Low strength	1.00
Morrisville	Moderate		Low		Severe	
	Water erosion	0.54			Low strength	1.00
JrA:						
Jonesboro	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
Rossmoyne	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
JrB:						
Jonesboro	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
Rossmoyne	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
JrC2:						
Jonesboro	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
Rossmoyne	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
KnA, KoA:						
Kokomo	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
LbA:						
Libre	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
LbB:						
Libre	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
LbC2:						
Libre	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
LoC2:						
Loudon	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00

Table 12.—Woodland Management, Part I—Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
LuA:						
Lumberton	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
LuB:						
Lumberton	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
LuC2:						
Lumberton	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
LuD2:						
Lumberton	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
LuF2:						
Lumberton	Severe		Low		Severe	
	Water erosion	0.93			Low strength	1.00
MhB2:						
Miamian	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MhC2:						
Miamian	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
MhD2:						
Miamian	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
MnE2:						
Miamian	Moderate		Low		Severe	
	Water erosion	0.54			Low strength	1.00
Thrifton	Moderate		Moderate		Severe	
	Water erosion	0.37	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
MnF2:						
Miamian	Severe		Low		Severe	
	Water erosion	0.93			Low strength	1.00
Thrifton	Severe		Moderate		Severe	
	Water erosion	0.68	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
MoE2:						
Miamian	Moderate		Low		Severe	
	Water erosion	0.54			Low strength	1.00
Crouse	Moderate		Low		Severe	
	Water erosion	0.54			Low strength	1.00
MoF2:						
Miamian	Severe		Low		Severe	
	Water erosion	0.93			Low strength	1.00
Crouse	Severe		Low		Severe	
	Water erosion	0.93			Low strength	1.00

Table 12.—Woodland Management, Part I—Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
MvD2:						
Morrisville-------	Moderate		Moderate		Severe	
	Water erosion	0.37	Soil reaction	0.50	Low strength	1.00
MvE2:						
Morrisville-------	Moderate		Low		Severe	
	Water erosion	0.54			Low strength	1.00
NhC2:						
Nicely------------	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
OcA:						
Ockley------------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
OcB:						
Ockley------------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
OdA:						
Ockley------------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
OdB:						
Ockley------------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
OdC2:						
Ockley------------	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
OeA:						
Odell-------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Pg:						
Pits, gravel------	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry------	Not rated		Not rated		Not rated	
RcA:						
Randolph----------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
ReA:						
Reesville---------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
ReB:						
Reesville---------	Slight		High		Severe	
	Water erosion	0.07	Wetness	1.00	Low strength	1.00
RnA, RoA:						
Ross--------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
RsA:						
Rossburg----------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00

Table 12.—Woodland Management, Part I—Continued

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RuB2:						
Russell	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
Xenia	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
SaA:						
Sardinia	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
SaB:						
Sardinia	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
ScA, SeA:						
Secondcreek	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
ShA:						
Shoals	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SmA:						
Sligo	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
SnA:						
Sloan	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SrA:						
Stringley	Slight		Moderate		Severe	
	Water erosion	0.01	Soil reaction	0.50	Low strength	1.00
			Carbonate content	0.50		
Sligo	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
TaA:						
Taggart	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
TpA, TrA:						
Treaty	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Ud:						
Udorthents	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaC3:						
Wapahani	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00
Miamian	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00

Table 12.—Woodland Management, Part I—Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
WaD3:						
Wapahani----------	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
Miamian-----------	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
WcA:						
Westboro----------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
Schaffer----------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
WcB:						
Westboro----------	Slight		High		Severe	
	Water erosion	0.07	Wetness	1.00	Low strength	1.00
Schaffer----------	Slight		High		Severe	
	Water erosion	0.07	Wetness	1.00	Low strength	1.00
WmA:						
Williamsburg------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
WmB:						
Williamsburg------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
XaA:						
Xenia-------------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
XaB, XaB2:						
Xenia-------------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00

Table 12.—Woodland Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
BhA, BhB:						
Birkbeck-------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
BmA:						
Blanchester----	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Ponding	0.50		
			Low strength	0.50		
CaD2:						
Casco----------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
	Too sandy	0.50				
CaE2:						
Casco----------	Severe		Poorly suited		Moderately suited	
	Slope	1.00	Slope	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CbB, CbB2:						
Celina---------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CcA:						
Celina---------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Crosby---------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
CeB, CeB2:						
Celina---------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Losantville----	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
CmA:						
Clermont-------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		

Table 12.—Woodland Management, Part II—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
CpA:						
Coblen	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CrB:						
Corwin	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CtA, CtB:						
Crosby	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Celina	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CuC2:						
Crouse	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
CuD2:						
Crouse	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
DhA, DuA:						
Dunham	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
EgB:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
EkC2:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
FgA, FgB:						
Fincastle	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		

Table 12.—Woodland Management, Part II—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
FnA, FnB:						
Fox------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
FnC2:						
Fox------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
HkD2:						
Hickory--------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
HkE2, HkF2:						
Hickory--------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
HnE2:						
Hickory--------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
Morrisville----	Severe		Poorly suited		Moderately suited	
	Soil slippage	1.00	Slope	1.00	Low strength	0.50
	Slope	0.50	Soil slippage	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50		
	Stickiness/slope	0.50				
	Depth to bedrock	0.50				
JrA, JrB:						
Jonesboro------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Rossmoyne------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
JrC2:						
Jonesboro------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
Rossmoyne------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
KnA, KoA:						
Kokomo---------	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
LbA, LbB:						
Libre----------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

Table 12.—Woodland Management, Part II—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
LbC2:						
Libre----------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
LoC2:						
Loudon---------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
LuA, LuB:						
Lumberton------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
LuC2:						
Lumberton------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
LuD2:						
Lumberton------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Depth to bedrock	0.50	Low strength	0.50		
	Low strength	0.50				
LuF2:						
Lumberton------	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MhB2:						
Miamian--------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MhC2:						
Miamian--------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
MhD2:						
Miamian--------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
MnE2:						
Miamian--------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
Thrifton-------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
			Depth to saturated zone	0.50		

Table 12.—Woodland Management, Part II—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
MnF2:						
Miamian	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Thrifton	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
MoE2:						
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
Crouse	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
MoF2:						
Miamian	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Crouse	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MvD2:						
Morrisville	Severe		Poorly suited		Moderately suited	
	Soil slippage	1.00	Soil slippage	1.00	Low strength	0.50
	Slope	0.50	Slope	1.00		
	Stickiness/slope	0.50	Low strength	0.50		
	Depth to bedrock	0.50				
	Low strength	0.50				
MvE2:						
Morrisville	Severe		Poorly suited		Moderately suited	
	Soil slippage	1.00	Slope	1.00	Low strength	0.50
	Slope	0.50	Soil slippage	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50		
	Stickiness/slope	0.50				
	Depth to bedrock	0.50				
NhC2:						
Nicely	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
OcA, OcB, OdA, OdB:						
Ockley	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
OdC2:						
Ockley	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		

Table 12.—Woodland Management, Part II—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
OeA:						
Odell----------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Pg:						
Pits, gravel---	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry---	Not rated		Not rated		Not rated	
RcA:						
Randolph-------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
	Depth to bedrock	0.50				
			Low strength	0.50		
ReA, ReB:						
Reesville------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
RnA, RoA:						
Ross-----------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
RsA:						
Rossburg-------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
RuB2:						
Russell--------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Xenia----------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SaA, SaB:						
Sardinia-------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
ScA, SeA:						
Secondcreek----	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
ShA:						
Shoals---------	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	0.50		
			Low strength	0.50		

Table 12.—Woodland Management, Part II—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SmA:						
Sligo	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
SnA:						
Sloan	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
SrA:						
Stringley	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Sligo	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
TaA:						
Taggart	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
TpA, TrA:						
Treaty	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Ud:						
Udorthents	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaC3:						
Wapahani	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
			Depth to saturated zone	0.50		
Miamian	Slight		Moderately suited		Moderately suited	
			Slope	0.50	Low strength	0.50
			Low strength	0.50		
WaD3:						
Wapahani	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		

Table 12.—Woodland Management, Part II—Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
WaD3:						
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
WcA, WcB:						
Westboro	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Schaffer	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
WmA, WmB:						
Williamsburg	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
XaA, XaB, XaB2:						
Xenia	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

Table 12.—Woodland Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
BhA, BhB:						
Birkbeck	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
BmA:						
Blanchester	Well suited		Well suited		Low	
					Texture/rock fragments	0.30
CaD2:						
Casco	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.01
	Rock fragment content	0.50				
CaE2:						
Casco	Unsuited		Poorly suited		Low	
	Slope	1.00	Slope	0.75	Texture/slope/ rock fragments	0.30
	Rock fragment content	0.50				
CbB:						
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CbB2:						
Celina	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
CcA:						
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Crosby	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CeB, CeB2:						
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Losantville	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
CmA:						
Clermont	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

Table 12.—Woodland Management, Part III—Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
CpA:						
Coblen---------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
CrB:						
Corwin---------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
CtA, CtB:						
Crosby---------	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Celina---------	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CuC2:						
Crouse---------	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
Miamian--------	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
CuD2:						
Crouse---------	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
Miamian--------	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
	Stickiness	0.50				
DhA:						
Dunham---------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
DuA:						
Dunham---------	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
EgB:						
Eldean---------	Moderately suited		Well suited		Low	
	Rock fragment content	0.50			Texture/rock fragments	0.01
EkC2:						
Eldean---------	Moderately suited		Well suited		Low	
	Rock fragment content	0.50			Texture/surface depth/rock fragments	0.30
	Slope	0.50				

Table 12.—Woodland Management, Part III—Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
FgA, FgB:						
Fincastle	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FnA, FnB:						
Fox	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FnC2:						
Fox	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
HkD2, HkE2:						
Hickory	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
	Stickiness	0.50				
HkF2:						
Hickory	Unsuited		Poorly suited		Moderate	
	Slope	1.00	Slope	0.75	Texture/slope/ rock fragments	0.70
	Stickiness	0.50				
HnE2:						
Hickory	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
Morrisville	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
JrA, JrB:						
Jonesboro	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Rossmoyne	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
JrC2:						
Jonesboro	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
Rossmoyne	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/surface depth/rock fragments	0.50
KnA:						
Kokomo	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

Table 12.—Woodland Management, Part III—Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
KoA:						
Kokomo	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
LbA, LbB:						
Libre	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
LbC2:						
Libre	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
LoC2:						
Loudon	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
LuA, LuB:						
Lumberton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
LuC2:						
Lumberton	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/surface depth/rock fragments	0.50
	Slope	0.50				
LuD2:						
Lumberton	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
LuF2:						
Lumberton	Unsuited		Unsuited		High	
	Slope	1.00	Slope	1.00	Texture/slope/ surface depth/ rock fragments	1.00
	Stickiness	0.50				
MhB2:						
Miamian	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MhC2:						
Miamian	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Slope	0.50				
MhD2:						
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
	Stickiness	0.50				

Table 12.—Woodland Management, Part III—Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
MnE2:						
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
Thrifton	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
MnF2:						
Miamian	Unsuited		Unsuited		Low	
	Slope	1.00	Slope	1.00	Texture/slope/ rock fragments	0.30
Thrifton	Unsuited		Unsuited		High	
	Slope	1.00	Slope	1.00	Texture/slope/ surface depth/ rock fragments	1.00
	Stickiness	0.50				
MoE2:						
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.01
Crouse	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
MoF2:						
Miamian	Unsuited		Unsuited		Low	
	Slope	1.00	Slope	1.00	Texture/slope/ rock fragments	0.30
	Stickiness	0.50				
Crouse	Unsuited		Unsuited		Moderate	
	Slope	1.00	Slope	1.00	Texture/rock fragments	0.50
MvD2:						
Morrisville	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.30
	Stickiness	0.75	Stickiness	0.50		
	Rock fragment content	0.50				
MvE2:						
Morrisville	Poorly suited		Poorly suited		Moderate	
	Rock fragment content	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Slope	0.75	Rock fragment content	0.50		
	Stickiness	0.75	Stickiness	0.50		
NhC2:						
Nicely	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50

Table 12.—Woodland Management, Part III—Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
OcA, OcB:						
Ockley	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
OdA, OdB:						
Ockley	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
OdC2:						
Ockley	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
OeA:						
Odell	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Pg:						
Pits, gravel	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry	Not rated		Not rated		Not rated	
RcA:						
Randolph	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
ReA, ReB:						
Reesville	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
RnA, RoA:						
Ross	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
RsA:						
Rossburg	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
RuB2:						
Russell	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
Xenia	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
SaA, SaB:						
Sardinia	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

Table 12.—Woodland Management, Part III—Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
ScA:						
Secondcreek----	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
SeA:						
Secondcreek----	Well suited		Well suited		Low	
					Texture/rock fragments	0.30
ShA:						
Shoals---------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
SmA:						
Sligo----------	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
SnA:						
Sloan----------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
SrA:						
Stringley------	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Sligo----------	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
TaA:						
Taggart--------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
TpA:						
Treaty---------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
TrA:						
Treaty---------	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
Ud:						
Udorthents-----	Not rated		Not rated		Not rated	
W:						
Water----------	Not rated		Not rated		Not rated	
WaC3:						
Wapahani-------	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/surface depth/rock fragments	0.50
	Slope	0.50				

Table 12.—Woodland Management, Part III—Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
WaC3:						
Miamian	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/surface depth/rock fragments	0.50
	Slope	0.50				
WaD3:						
Wapahani	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
Miamian	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
WcA, WcB:						
Westboro	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Schaffer	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
WmA, WmB:						
Williamsburg	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
XaA, XaB:						
Xenia	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
XaB2:						
Xenia	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50

Table 13.—Woodland Productivity

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
BhA, BhB:				
Birkbeck	green ash	---	---	Norway spruce, Scotch pine, black walnut, eastern white pine, green ash, northern red oak, white oak
	northern red oak	---	---	
	white oak	86	72	
BmA:				
Blanchester	black cherry	---	---	American sycamore, blackgum, bur oak, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	pin oak	90	72	
	red maple	---	---	
	swamp white oak	---	---	
CaD2, CaE2:				
Casco	eastern white pine	85	72	eastern white pine
	red pine	78	72	
	white oak	70	57	
CbB, CbB2:				
Celina	black cherry	---	---	Norway spruce, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
CcA:				
Celina	black cherry	---	---	Norway spruce, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
Crosby	black oak	88	72	American sycamore, black oak, eastern white pine, green ash, northern red oak, red maple, river birch, tuliptree, white ash, white oak
	northern red oak	86	72	
	tuliptree	94	100	
	white ash	87	86	
CeB, CeB2:				
Celina	black cherry	---	---	Norway spruce, black walnut, chinkapin oak, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
CeB, CeB2:				
Losantville	northern red oak	78	72	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	sugar maple	---	---	
	white ash	---	---	
	white oak	---	---	
CmA:				
Clermont	black cherry	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	northern red oak	96	72	
	pin oak	86	72	
	red maple	---	---	
	swamp white oak	---	---	
	sweetgum	67	57	
	tuliptree	97	100	
CpA:				
Coblen	black cherry	---	---	Norway spruce, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	86	72	
	sugar maple	---	---	
	tuliptree	96	100	
	white ash	---	---	
	white oak	---	---	
CrB:				
Corwin	black cherry	---	---	Norway spruce, black walnut, chinkapin oak, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	86	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
CtA:				
Crosby	black oak	88	72	American sycamore, black oak, eastern white pine, green ash, northern red oak, red maple, river birch, tuliptree, white ash, white oak
	northern red oak	86	72	
	tuliptree	94	100	
	white ash	87	86	
Celina	black cherry	---	---	Norway spruce, black walnut, chinkapin oak, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
CtB:				
Crosby	black oak	88	72	American sycamore, black oak, eastern white pine, green ash, northern red oak, red maple, river birch, tuliptree, white ash, white oak
	northern red oak	86	72	
	tuliptree	94	100	
	white ash	87	86	
Celina	black cherry	---	---	Norway spruce, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
CuC2:				
Crouse	black cherry	---	---	Norway spruce, black cherry, black locust, chinkapin oak, green ash, northern red oak, shagbark hickory, tuliptree, white ash, white oak
	northern red oak	89	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Miamian	black cherry	---	---	Norway spruce, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
CuD2:				
Crouse	black cherry	---	---	Norway spruce, black cherry, black locust, chinkapin oak, green ash, northern red oak, shagbark hickory, tuliptree, white ash, white oak
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Miamian	black cherry	---	---	Norway spruce, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
DhA, DuA:				
Dunham	northern red oak	75	---	eastern cottonwood, eastern white pine, green ash, pin oak, red maple, river birch, sweetgum
	pin oak	85	57	
	sweetgum	90	---	
	white oak	75	---	
EgB:				
Eldean	black cherry	---	---	Norway spruce, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
EkC2:				
Eldean	black cherry	---	---	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
FgA:				
Fincastle	northern red oak	75	57	American sycamore, baldcypress, bur oak, green ash, red maple, sweetgum, tuliptree, white ash
	pin oak	85	72	
	sweetgum	80	86	
	tuliptree	85	86	
	white oak	75	57	
FgB:				
Fincastle	northern red oak	75	57	American sycamore, baldcypress, blackgum, bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum, tuliptree, white ash
	pin oak	85	72	
	sweetgum	80	86	
	tuliptree	85	86	
	white oak	75	57	
FnA, FnB, FnC2:				
Fox	black cherry	---	---	black locust, chinkapin oak, eastern white pine, northern red oak, tuliptree, white ash, white oak
	northern red oak	80	57	
	sugar maple	---	---	
	white ash	---	---	
	white oak	---	---	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
HkD2, HkE2, HkF2:				
Hickory	black oak	---	---	chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	green ash	---	---	
	northern red oak	85	72	
	tuliptree	95	100	
	white oak	85	72	
HnE2:				
Hickory	black oak	---	---	chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	green ash	---	---	
	northern red oak	85	72	
	tuliptree	95	100	
	white oak	85	72	
Morrisville	black cherry	---	---	Norway spruce, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
JrA:				
Jonesboro	American beech	---	---	black oak, bur oak, eastern white pine, northern red oak, tuliptree, white ash
	American sycamore	---	---	
	northern red oak	85	72	
	slippery elm	---	---	
	sugar maple	---	---	
	white ash	---	---	
Rossmoyne	American beech	---	---	black oak, bur oak, eastern white pine, northern red oak, tuliptree, white ash
	American sycamore	---	---	
	northern red oak	80	57	
	slippery elm	---	---	
	sugar maple	---	---	
	white ash	---	---	
	white oak	61	43	
JrB, JrC2:				
Jonesboro	American beech	---	---	black oak, bur oak, eastern white pine, northern red oak, tuliptree, white ash, white oak
	American sycamore	---	---	
	northern red oak	85	72	
	slippery elm	---	---	
	sugar maple	---	---	
	white ash	---	---	
Rossmoyne	American beech	---	---	black oak, eastern white pine, northern red oak, sugar maple, tuliptree, white ash
	American sycamore	---	---	
	northern red oak	80	57	
	slippery elm	---	---	
	sugar maple	---	---	
	white ash	---	---	
	white oak	61	43	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
KnA, KoA:				
Kokomo	northern red oak	75	57	American sycamore, Norway spruce, blackgum, bur oak, eastern cottonwood, green ash, pin oak, red maple, river birch, swamp white oak, sweetgum
	pin oak	85	72	
	sweetgum	90	100	
	white oak	75	57	
LbA, LbB, LbC2:				
Libre	sweetgum	76	72	Norway spruce, black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	tuliptree	98	100	
	white oak	90	72	
LoC2:				
Loudon	black cherry	---	---	American sycamore, Austrian pine, black oak, eastern cottonwood, green ash, pin oak, red maple, tuliptree
	red maple	---	---	
	slippery elm	---	---	
	white ash	---	---	
	white oak	68	57	
LuA:				
Lumberton	black cherry	---	---	eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
LuB, LuC2, LuD2, LuF2:				
Lumberton	black cherry	---	---	chinkapin oak, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MhB2, MhC2, MhD2:				
Miamian	black cherry	---	---	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MnE2:				
Miamian	black cherry	---	---	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Thrifton	black cherry	---	---	Norway spruce, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MnF2:				
Miamian	black cherry	---	---	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Thrifton	northern red oak	87	72	Norway spruce, eastern white pine, northern red oak
	sugar maple	---	---	
	white ash	---	---	
	white oak	---	---	
MoE2, MoF2:				
Miamian	black cherry	---	---	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Crouse	black cherry	---	---	Norway spruce, black cherry, black locust, chinkapin oak, green ash, northern red oak, shagbark hickory, tuliptree, white ash, white oak
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MvD2:				
Morrisville	black cherry	---	---	chinkapin oak, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MvE2:				
Morrisville	black cherry	---	---	Norway spruce, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
NhC2:				
Nicely	bitternut hickory	---	---	Norway spruce, chinkapin oak, eastern white pine, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black oak	---	---	
	green ash	---	---	
	northern red oak	85	72	
	tuliptree	95	100	
	white oak	85	72	
OcA:				
Ockley	northern red oak	90	72	eastern white pine, sugar maple, white oak
	sweetgum	76	---	
	tuliptree	100	100	
	white ash	---	---	
	white oak	90	72	
OcB:				
Ockley	northern red oak	90	72	eastern white pine, sugar maple, white oak
	tuliptree	100	100	
	white ash	---	---	
	white oak	90	72	
OdA:				
Ockley	northern red oak	90	72	black locust, black walnut, chinkapin oak, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	tuliptree	98	100	
	white oak	90	72	
OdB, OdC2:				
Ockley	northern red oak	90	72	black locust, black walnut, chinkapin oak, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
OeA:				
Odell	black oak	88	---	eastern white pine, green ash, northern red oak, red maple, river birch, tuliptree, white ash
	northern red oak	86	72	
	tuliptree	94	---	
	white ash	87	---	
Pg. Pits, gravel				
Pk. Pits, quarry				
RcA:				
Randolph	northern red oak	75	57	eastern white pine, tuliptree
	sugar maple	90	86	
	tuliptree	85	86	
ReA, ReB:				
Reesville	black cherry	---	---	American sycamore, baldcypress, bur oak, eastern cottonwood, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	northern red oak	76	57	
	pin oak	---	---	
	red maple	---	---	
	sugar maple	90	57	
	swamp white oak	---	---	
	tuliptree	86	86	
RnA, RoA:				
Ross	black cherry	---	---	Norway spruce, black walnut, eastern white pine, tuliptree, white ash
	black walnut	---	---	
	northern red oak	86	72	
	sugar maple	85	57	
	tuliptree	96	100	
	white ash	---	---	
	white oak	---	---	
RsA:				
Rossburg	northern red oak	86	72	black walnut, northern red oak, tuliptree, white oak
	tuliptree	---	---	
	white oak	---	---	
RuB2:				
Russell	northern red oak	90	72	Norway spruce, black cherry, black locust, black walnut, chinkapin oak, eastern white pine, green ash, northern red oak, tuliptree, white ash, white oak
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Trees to manage
			cu ft/ac	
RuB2:				
Xenia	sweetgum	76	72	Norway spruce, black walnut, chinkapin oak, eastern white pine, northern red oak, tuliptree, white ash, white oak
	tuliptree	98	100	
	white oak	90	72	
SaA, SaB:				
Sardinia	black cherry	---	---	black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	northern red oak	85	72	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	85	72	
ScA, SeA:				
Secondcreek	eastern cottonwood	---	---	baldcypress, blackgum, bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	80	57	
	red maple	---	---	
	swamp white oak	70	57	
ShA:				
Shoals	Virginia pine	90	129	bur oak, green ash, pin oak, red maple, swamp white oak, sweetgum, tuliptree
	eastern cottonwood	---	---	
	pin oak	90	72	
	sweetgum	86	100	
	tuliptree	90	86	
	white ash	---	---	
SmA:				
Sligo	American sycamore	---	---	American sycamore, black walnut, bur oak, eastern cottonwood, tuliptree, white ash
	black walnut	---	---	
	eastern cottonwood	---	---	
	northern red oak	80	57	
	red maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
SnA:				
Sloan	eastern cottonwood	---	---	American sycamore, green ash, pin oak, red maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	86	57	
	red maple	---	---	
	swamp white oak	---	57	
SrA:				
Stringley	American sycamore	---	---	American sycamore, black walnut, bur oak, eastern cottonwood, green ash, tuliptree
	eastern cottonwood	---	---	
	green ash	---	---	
	sweetgum	---	---	
	tuliptree	95	100	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
SrA:				
Sligo	American sycamore	---	---	black walnut, bur oak, eastern cottonwood, tuliptree
	black walnut	---	---	
	eastern cottonwood	---	---	
	northern red oak	80	57	
	red maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
TaA:				
Taggart	northern red oak	75	---	American sycamore, bur oak, green ash, red maple, sweetgum, white ash
	pin oak	85	57	
	sweetgum	80	---	
	tuliptree	85	57	
	white oak	75	---	
TpA, TrA:				
Treaty	northern red oak	75	---	eastern cottonwood, green ash, pin oak, red maple, river birch, sweetgum
	pin oak	85	57	
	sweetgum	90	---	
	white oak	75	---	
Ud. Udorthents				
W. Water				
WaC3, WaD3:				
Wapahani	black cherry	---	---	Norway spruce, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Miamian	black cherry	---	---	Norway spruce, black locust, chinkapin oak, eastern white pine, northern red oak, shagbark hickory, sugar maple, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
WcA, WcB:				
Westboro	northern red oak	---	---	American sycamore, baldcypress, blackgum, bur oak, green ash, red maple, swamp white oak, sweetgum, tuliptree
	pin oak	---	---	
	sweetgum	---	---	
	tuliptree	---	---	
	white oak	---	---	

Table 13.—Woodland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
WcA, WcB:				
Schaffer	northern red oak	75	57	black oak, blackgum, bur oak, green ash, red maple, swamp white oak, sweetgum, tuliptree, white ash
	pin oak	85	72	
	sweetgum	80	86	
	tuliptree	85	86	
	white oak	70	57	
WmA, WmB:				
Williamsburg	black cherry	---	---	Norway spruce, black walnut, eastern white pine, northern red oak, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	85	72	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	85	72	
XaA:				
Xenia	sweetgum	76	72	black walnut, bur oak, eastern white pine, northern red oak, tuliptree, white ash, white oak
	tuliptree	98	100	
	white oak	90	72	
XaB:				
Xenia	sweetgum	76	72	Norway spruce, black walnut, chinkapin oak, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	tuliptree	98	100	
	white oak	90	72	
XaB2:				
Xenia	sweetgum	76	72	Norway spruce, chinkapin oak, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak
	tuliptree	98	100	
	white oak	90	72	

Table 14.—Windbreaks and Environmental Plantings

(Absence of an entry indicates that trees generally do not grow to the given height)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
BhA, BhB: Birkbeck	silky dogwood	American cranberrybush, American hazelnut	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
BmA: Blanchester	silky dogwood	American cranberrybush, redosier dogwood	American witchhazel, Austrian pine, northern white-cedar, Washington hawthorn, white fir	boxelder, Norway spruce	pin oak
CaD2, CaE2: Casco	---	eastern redcedar, Washington hawthorn	Austrian pine, red pine	eastern white pine	blue spruce
CbB, CbB2: Celina	silky dogwood	American cranberrybush, American hazelnut	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
CcA: Celina	silky dogwood	American cranberrybush	American witchhazel, blue spruce, northern white-cedar, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
Crosby	American cranberrybush	southern arrowwood	Austrian pine, eastern redcedar, green ash, osageorange, Washington hawthorn	eastern white pine	pin oak
CeB, CeB2: Celina	silky dogwood	American cranberrybush	American witchhazel, blue spruce, northern white-cedar, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine

Table 14.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
CeB, CeB2: Losantville	silky dogwood	American cranberrybush	blue spruce, northern white-cedar, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
CmA: Clermont	silky dogwood	American cranberrybush, redosier dogwood, southern arrowwood	American witchhazel, Austrian pine, northern white-cedar, Washington hawthorn	boxelder, Norway spruce	pin oak
CpA: Coblen	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	blue spruce, nannyberry, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
CrB: Corwin	silky dogwood	American cranberrybush, American hazelnut	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak
CtA, CtB: Crosby	American cranberrybush	southern arrowwood	American witchhazel, Austrian pine, eastern redcedar, green ash, northern white-cedar, osageorange, Washington hawthorn	eastern white pine, pin oak	---
Celina	silky dogwood	American cranberrybush	blue spruce, northern white-cedar, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak

Table 14.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
CuC2, CuD2:					
Crouse	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
Miamian	silky dogwood	American cranberrybush	blue spruce, northern white-cedar, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
DhA, DuA:					
Dunham	silky dogwood	blackhaw	Austrian pine, Washington hawthorn, white fir	Norway spruce	pin oak
EgB:					
Eldean	common lilac, Siberian peashrub	American hazelnut, eastern redcedar, radiant crabapple, southern arrowwood, Washington hawthorn	American plum, Austrian pine	eastern white pine	---
EkC2:					
Eldean	common lilac, Siberian peashrub	American hazelnut, eastern redcedar, radiant crabapple, southern arrowwood, Washington hawthorn	Austrian pine	---	eastern white pine
FgA, FgB:					
Fincastle	silky dogwood	American cranberrybush, redosier dogwood	American witchhazel, blue spruce, nannyberry, northern white-cedar, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak
FnA, FnB, FnC2:					
Fox	common lilac, Siberian peashrub	American hazelnut, eastern redcedar, radiant crabapple, southern arrowwood, Washington hawthorn	American plum, Austrian pine, eastern white pine, serviceberry, Virginia pine	---	---

Table 14.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
HkD2, HkE2, HkF2: Hickory	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
HnE2: Hickory	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
Morrisville	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
JrA, JrB: Jonesboro	silky dogwood	American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak
Rossmoyne	American cranberrybush	southern arrowwood	Austrian pine, eastern redcedar, green ash, osageorange, serviceberry, Washington hawthorn	eastern white pine	pin oak
JrC2: Jonesboro	silky dogwood	American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak

Table 14.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
JrC2: Rossmoyne	American cranberrybush	American hazelnut, southern arrowwood	Austrian pine, eastern redcedar, green ash, osageorange, serviceberry, Washington hawthorn	eastern white pine	pin oak
KnA, KoA: Kokomo	silky dogwood	American cranberrybush, redosier dogwood	American witchhazel, Austrian pine, blue spruce, nannyberry, northern white-cedar, Washington hawthorn, white fir	boxelder, Norway spruce	pin oak
LbA, LbB, LbC2: Libre	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
LoC2: Loudon	American cranberrybush	southern arrowwood	American plum, Austrian pine, eastern redcedar, green ash, osageorange, Washington hawthorn	eastern white pine	---
LuA, LuB, LuC2: Lumberton	silky dogwood	American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
LuD2, LuF2: Lumberton	silky dogwood	American hazelnut, southern arrowwood	northern white-cedar, serviceberry, Washington hawthorn	Austrian pine, Norway spruce	eastern white pine

Table 14.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
MhB2, MhC2, MhD2:					
Miamian	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
MnE2:					
Miamian	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
Thrifton	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, northern white-cedar, serviceberry, Washington hawthorn	Austrian pine, Norway spruce	eastern white pine
MnF2:					
Miamian	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, northern white-cedar, serviceberry, Washington hawthorn	Austrian pine, Norway spruce	eastern white pine
Thrifton	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, northern white-cedar, serviceberry, Washington hawthorn	Austrian pine, Norway spruce	eastern white pine
MoE2:					
Miamian	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, northern white-cedar, serviceberry, Washington hawthorn	Austrian pine, Norway spruce	eastern white pine
Crouse	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	northern white-cedar, serviceberry, Washington hawthorn	Austrian pine, Norway spruce	eastern white pine

Table 14.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
MoF2:					
Miamian	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	northern white-cedar, serviceberry, Washington hawthorn	Austrian pine, Norway spruce	eastern white pine
Crouse	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
MvD2:					
Morrisville	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, northern white-cedar, serviceberry, Washington hawthorn	Austrian pine, Norway spruce	eastern white pine, pin oak
MvE2:					
Morrisville	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, blue spruce, northern white-cedar, serviceberry, Washington hawthorn	Austrian pine	eastern white pine
NhC2:					
Nicely	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
OcA, OcB, OdA, OdB, OdC2:					
Ockley	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine

Table 14.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
OeA: Odell	silky dogwood	American cranberrybush, redosier dogwood	American witchhazel, nannyberry, northern white-cedar, Washington hawthorn	Austrian pine, Norway spruce	pin oak
Pg. Pits, gravel					
Pk. Pits, quarry					
RcA: Randolph	silky dogwood	black hawthorn	Austrian pine, blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Norway spruce	---
ReA: Reesville	silky dogwood	American cranberrybush, redosier dogwood	American witchhazel, northern white-cedar, Washington hawthorn	Austrian pine, nannyberry, Norway spruce	pin oak
ReB: Reesville	silky dogwood	American cranberrybush, redosier dogwood	American witchhazel, nannyberry, northern white-cedar, Washington hawthorn	Austrian pine, Norway spruce	pin oak
RnA, RoA: Ross	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak
RsA: Rossburg	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak

Table 14.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
RuB2:					
Russell	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
Xenia	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
SaA, SaB:					
Sardinia	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak
ScA:					
Secondcreek	silky dogwood	redosier dogwood	American witchhazel, nannyberry, northern white-cedar, Washington hawthorn	boxelder	pin oak
SeA:					
Secondcreek	silky dogwood	redosier dogwood	American witchhazel, northern white-cedar, Washington hawthorn	boxelder, nannyberry	pin oak
ShA:					
Shoals	silky dogwood	American cranberrybush, redosier dogwood	American witchhazel, northern white-cedar, Washington hawthorn	nannyberry, Norway spruce	pin oak
SmA:					
Sligo	silky dogwood	American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak

Table 14.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
SnA:					
Sloan	silky dogwood	American cranberrybush	Austrian pine, Washington hawthorn, white fir	boxelder	baldcypress, pin oak
SrA:					
Stringley	silky dogwood	Siberian peashrub	blue spruce, eastern redcedar, nannyberry, osageorange, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
Sligo	silky dogwood	American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak
TaA:					
Taggart	silky dogwood	American cranberrybush, redosier dogwood	American witchhazel, blue spruce, northern white-cedar, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak
TpA:					
Treaty	silky dogwood	American cranberrybush, redosier dogwood	American witchhazel, Austrian pine, nannyberry, northern white-cedar, Washington hawthorn	boxelder	pin oak
TrA:					
Treaty	silky dogwood	American cranberrybush, redosier dogwood	American witchhazel, Austrian pine, northern white-cedar, Washington hawthorn	boxelder, nannyberry	pin oak
Ud.					
Udorthents					
W.					
Water					

Table 14.—Windbreaks and Environmental Plantings—Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
WaC3, WaD3:					
Wapahani	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, eastern redcedar, northern white-cedar, serviceberry, Washington hawthorn	Austrian pine, Norway spruce	eastern white pine
Miamian	silky dogwood	American cranberrybush	blue spruce, northern white-cedar, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine
WcA, WcB:					
Westboro	American cranberrybush	southern arrowwood	Austrian pine, eastern redcedar, green ash, osageorange, Washington hawthorn	Norway spruce	pin oak
Schaffer	American cranberrybush	southern arrowwood	Austrian pine, eastern redcedar, green ash, osageorange, Washington hawthorn	Norway spruce	pin oak
WmA, WmB:					
Williamsburg	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine, pin oak
XaA, XaB, XaB2:					
Xenia	silky dogwood	American cranberrybush, American hazelnut, southern arrowwood	American plum, blue spruce, northern white-cedar, serviceberry, Washington hawthorn, white fir	Austrian pine, Norway spruce	eastern white pine

Table 15.—Recreational Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BhA:						
Birkbeck	Not limited		Not limited		Not limited	
BhB:						
Birkbeck	Not limited		Not limited		Somewhat limited	
					Slope	0.50
BmA:						
Blanchester	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
CaD2, CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.03
					Content of large stones	0.01
CbB, CbB2:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10
CcA:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
CeB, CeB2:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10

Table 15.—Recreational Development, Part I—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
CeB, CeB2:						
Losantville----	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
CmA:						
Clermont-------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
CpA:						
Coblen---------	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.05	Depth to saturated zone	0.10
	Depth to saturated zone	0.10				
CrB:						
Corwin---------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.44	Depth to saturated zone	0.21	Slope	0.50
					Depth to saturated zone	0.44
CtA:						
Crosby---------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
Celina---------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
CtB:						
Crosby---------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.13
Celina---------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.13
					Depth to saturated zone	0.10

Table 15.—Recreational Development, Part I—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
CuC2:						
Crouse----------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
Miamian---------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
CuD2:						
Crouse----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Miamian---------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
DhA, DuA:						
Dunham----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
EgB:						
Eldean----------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
EkC2:						
Eldean----------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Gravel content	0.04	Gravel content	0.04	Gravel content	1.00
					Content of large stones	0.01
FgA:						
Fincastle-------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
FgB:						
Fincastle-------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Slope	0.13
FnA:						
Fox-------------	Not limited		Not limited		Not limited	
FnB:						
Fox-------------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
FnC2:						
Fox-------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00

Table 15.—Recreational Development, Part I—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
HkD2, HkE2, HkF2:						
Hickory-------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
HnE2:						
Hickory--------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Morrisville----	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
JrA:						
Jonesboro------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.44	Depth to saturated zone	0.21	Depth to saturated zone	0.44
Rossmoyne------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.21	Depth to saturated zone	0.44
JrB:						
Jonesboro------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.44	Depth to saturated zone	0.21	Slope	0.50
					Depth to saturated zone	0.44
Rossmoyne------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.21	Slope	0.50
					Depth to saturated zone	0.44
JrC2:						
Jonesboro------	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Depth to saturated zone	0.44	Slope	0.32	Restricted permeability	0.96
	Slope	0.32	Depth to saturated zone	0.21	Depth to saturated zone	0.44
Rossmoyne------	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.44	Slope	0.32	Slope	1.00
	Slope	0.32	Depth to saturated zone	0.21	Depth to saturated zone	0.44
KnA, KoA:						
Kokomo---------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

Table 15.—Recreational Development, Part I—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
LbA:						
Libre----------	Not limited		Not limited		Not limited	
LbB:						
Libre----------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
LbC2:						
Libre----------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
LoC2:						
Loudon---------	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Depth to saturated zone	0.44	Slope	0.32	Restricted permeability	0.96
	Slope	0.32	Depth to saturated zone	0.21	Depth to saturated zone	0.44
LuA:						
Lumberton------	Not limited		Not limited		Not limited	
LuB:						
Lumberton------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
LuC2:						
Lumberton------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
LuD2:						
Lumberton------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
LuF2:						
Lumberton------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.16
MhB2:						
Miamian--------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
MhC2:						
Miamian--------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MhD2:						
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

Table 15.—Recreational Development, Part I—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
MnE2, MnF2:						
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Thrifton-------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MoE2, MoF2:						
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Crouse---------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MvD2, MvE2:						
Morrisville----	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
NhC2:						
Nicely---------	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.44	Slope	0.32	Slope	1.00
	Slope	0.32	Restricted permeability	0.21	Depth to saturated zone	0.44
	Restricted permeability	0.21	Depth to saturated zone	0.21	Restricted permeability	0.21
						0.21
OcA:						
Ockley---------	Not limited		Not limited		Not limited	
OcB:						
Ockley---------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
OdA:						
Ockley---------	Not limited		Not limited		Not limited	
OdB:						
Ockley---------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
OdC2:						
Ockley---------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
OeA:						
Odell----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 15.—Recreational Development, Part I—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
Pg:						
Pits, gravel	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
ReA:						
Reesville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
ReB:						
Reesville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Slope	0.13
RnA:						
Ross	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
RoA:						
Ross	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
RsA:						
Rossburg	Very limited		Not limited		Not limited	
	Flooding	1.00				
RuB2:						
Russell	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
SaA:						
Sardinia	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
SaB:						
Sardinia	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10

Table 15.—Recreational Development, Part I—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
ScA, SeA:						
Secondcreek----	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
ShA:						
Shoals---------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00			Flooding	0.60
SmA:						
Sligo----------	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
SnA:						
Sloan----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00			Flooding	0.60
SrA:						
Stringley------	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
Sligo----------	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
TaA:						
Taggart--------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
TpA, TrA:						
Treaty---------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Ud:						
Udorthents-----	Not rated		Not rated		Not rated	
W:						
Water----------	Not rated		Not rated		Not rated	
WaC3:						
Wapahani-------	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Slope	1.00
	Slope	0.32	Slope	0.32	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

Table 15.—Recreational Development, Part I—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
WaC3:						
Miamian--------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
WaD3:						
Wapahani-------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
WcA:						
Westboro-------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Schaffer-------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
WcB:						
Westboro-------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Slope	0.13
Schaffer-------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
					Slope	0.13
WmA:						
Williamsburg---	Not limited		Not limited		Not limited	
WmB:						
Williamsburg---	Not limited		Not limited		Somewhat limited	
					Slope	0.50
XaA:						
Xenia----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

Table 15.—Recreational Development, Part I—Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
XaB, XaB2:						
Xenia----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21

Table 15.—Recreational Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
BhA, BhB:						
Birkbeck	Not limited		Not limited		Not limited	
BmA:						
Blanchester	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
CaD2:						
Casco	Somewhat limited		Not limited		Very limited	
	Slope	0.11			Slope	1.00
					Content of large stones	0.01
CaE2:						
Casco	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.68	Slope	1.00
					Droughty	0.01
					Content of large stones	0.01
CbB, CbB2:						
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
CcA:						
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CeB:						
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
Losantville	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Droughty	0.70
CeB2:						
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
Losantville	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Droughty	0.87
					Depth to saturated zone	0.75

Table 15.—Recreational Development, Part II—Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
CmA:						
Clermont	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
CpA:						
Coblen	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
CrB:						
Corwin	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
CtA, CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
CuC2:						
Crouse	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
CuD2:						
Crouse	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
DhA, DuA:						
Dunham	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
EgB:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
EkC2:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Carbonate content	1.00
					Droughty	0.38
					Slope	0.04
					Gravel content	0.04
					Content of large stones	0.01

Table 15.—Recreational Development, Part II—Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
FgA, FgB:						
Fincastle	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
FnA, FnB:						
Fox	Not limited		Not limited		Not limited	
FnC2:						
Fox	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
HkD2:						
Hickory	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
HkE2:						
Hickory	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89				
HkF2:						
Hickory	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.22		
HnE2:						
Hickory	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89				
Morrisville	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89			Droughty	0.02
JrA, JrB:						
Jonesboro	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
Rossmoyne	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
JrC2:						
Jonesboro	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	0.19
					Slope	0.04
Rossmoyne	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	0.19
					Slope	0.04
					Droughty	0.01

Table 15.—Recreational Development, Part II—Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
KnA, KoA:						
Kokomo----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
LbA, LbB:						
Libre-----------	Not limited		Not limited		Not limited	
LbC2:						
Libre-----------	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
LoC2:						
Loudon----------	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	0.19
					Slope	0.04
LuA, LuB:						
Lumberton-------	Not limited		Not limited		Very limited	
					Carbonate content	1.00
LuC2:						
Lumberton-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Carbonate content	1.00
					Slope	0.04
LuD2:						
Lumberton-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
LuF2:						
Lumberton-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.96	Depth to bedrock	0.16
MhB2:						
Miamian---------	Not limited		Not limited		Not limited	
MhC2:						
Miamian---------	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
MhD2:						
Miamian---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Droughty	0.04
MnE2:						
Miamian---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89				
Thrifton--------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.89	Depth to saturated zone	0.44	Slope	1.00
	Depth to saturated zone	0.44			Depth to saturated zone	0.75
					Droughty	0.65

Table 15.—Recreational Development, Part II—Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
MnF2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.96		
Thrifton	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.96	Slope	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Droughty	0.74
MoE2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89				
Crouse	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89				
MoF2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.96		
Crouse	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.96		
MvD2:						
Morrisville	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Droughty	0.01
MvE2:						
Morrisville	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89			Droughty	0.04
NhC2:						
Nicely	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	0.19
					Slope	0.04
OcA, OcB, OdA, OdB:						
Ockley	Not limited		Not limited		Not limited	
OdC2:						
Ockley	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
OeA:						
Odell	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Pg:						
Pits, gravel	Not rated		Not rated		Not rated	

Table 15.—Recreational Development, Part II—Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
Pk:						
Pits, quarry	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Depth to bedrock	0.03
ReA, ReB:						
Reesville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
RnA:						
Ross	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
RoA:						
Ross	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
RsA:						
Rossburg	Not limited		Not limited		Not limited	
RuB2:						
Russell	Not limited		Not limited		Not limited	
Xenia	Not limited		Not limited		Not limited	
SaA, SaB:						
Sardinia	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
ScA, SeA:						
Secondcreek	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
ShA:						
Shoals	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Flooding	0.60
SmA:						
Sligo	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Flooding	0.60

Table 15.—Recreational Development, Part II—Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
SrA:						
Stringley	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
Sligo	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
TaA:						
Taggart	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
TpA, TrA:						
Treaty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Ud:						
Udorthents	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaC3:						
Wapahani	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Droughty	0.96
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Slope	0.04
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
WaD3:						
Wapahani	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Droughty	0.92
	Slope	0.11			Depth to saturated zone	0.75
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Droughty	0.05
WcA, WcB:						
Westboro	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
Schaffer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
WmA, WmB:						
Williamsburg	Not limited		Not limited		Not limited	
XaA, XaB, XaB2:						
Xenia	Not limited		Not limited		Not limited	

Table 16.—Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
BhA, BhB:										
Birkbeck	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BmA:										
Blanchester	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
CaD2, CaE2:										
Casco	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CbB, CbB2:										
Celina	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CcA:										
Celina	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Crosby	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
CeB, CeB2:										
Celina	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Losantville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CmA:										
Clermont	Fair	Fair	Good	Fair	Fair	Good	Good	Fair	Fair	Good.
CpA:										
Coblen	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CrB:										
Corwin	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
CtA:										
Crosby	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Celina	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CtB:										
Crosby	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Celina	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CuC2:										
Crouse	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Miamian	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

Table 16.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
CuD2:										
Crouse	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Miamian	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
DhA, DuA:										
Dunham	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
EgB:										
Eldean	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EkC2:										
Eldean	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FgA:										
Fincastle	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
FgB:										
Fincastle	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FnA, FnB:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FnC2:										
Fox	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HkD2, HkE2, HkF2:										
Hickory	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HnE2:										
Hickory	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Morrisville	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
JrA:										
Jonesboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Rossmoyne	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
JrB:										
Jonesboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Rossmoyne	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
JrC2:										
Jonesboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Rossmoyne	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

Table 16.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
KnA, KoA:										
Kokomo----------	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
LbA, LbB:										
Libre-----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LbC2:										
Libre-----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LoC2:										
Loudon----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LuA:										
Lumberton-------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
LuB, LuC2:										
Lumberton-------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LuD2:										
Lumberton-------	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LuF2:										
Lumberton-------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
MhB2:										
Miamian---------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MhC2:										
Miamian---------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MhD2:										
Miamian---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MnE2:										
Miamian---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Thrifton--------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MnF2:										
Miamian---------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Thrifton--------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.

Table 16.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
MoE2:										
Miamian	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Crouse	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MoF2:										
Miamian	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Crouse	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
MvD2:										
Morrisville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MvE2:										
Morrisville	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
NhC2:										
Nicely	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
OcA, OcB, OdA, OdB:										
Ockley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OdC2:										
Ockley	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
OeA:										
Odell	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Pg. Pits, gravel										
Pk. Pits, quarry										
RcA:										
Randolph	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
ReA:										
Reesville	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
ReB:										
Reesville	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RnA, RoA:										
Ross	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 16.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
RsA:										
Rossburg-------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RuB2:										
Russell--------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Xenia----------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SaA:										
Sardinia-------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SaB:										
Sardinia-------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ScA, SeA:										
Secondcreek----	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
ShA:										
Shoals---------	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
SmA:										
Sligo----------	Good	Good	Good	Good	Good	Poor	Good	Good	Good	Fair.
SnA:										
Sloan----------	Fair	Fair	Fair	Poor	Poor	Good	Good	Fair	Poor	Good.
SrA:										
Stringley------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Sligo----------	Good	Good	Good	Good	Good	Poor	Good	Good	Good	Fair.
TaA:										
Taggart--------	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
TpA, TrA:										
Treaty---------	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Ud.										
Udorthents										
W.										
Water										
WaC3:										
Wapahani-------	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Miamian--------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

Table 16.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
WaD3:										
Wapahani-------	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Miamian--------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
WcA:										
Westboro-------	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Schaffer-------	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
WcB:										
Westboro-------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Schaffer-------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WmA, WmB:										
Williamsburg---	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
XaA, XaB, XaB2:										
Xenia----------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

Table 17.—Construction Materials, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
BhA, BhB:				
Birkbeck	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
BmA:				
Blanchester	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CaD2, CaE2:				
Casco	Good		Fair	
	Bottom layer	0.79	Thickest layer	0.76
			Bottom layer	0.76
CbB, CbB2:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CcA:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CeB, CeB2:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Losantville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CmA:				
Clermont	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CpA:				
Coblen	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CrB:				
Corwin	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 17.—Construction Materials, Part I—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
CtA, CtB:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CuC2, CuD2:				
Crouse	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
DhA:				
Dunham	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.72
	Bottom layer	0.93	Bottom layer	0.89
DuA:				
Dunham	Fair		Fair	
	Thickest layer	0.16	Thickest layer	0.54
	Bottom layer	0.93	Bottom layer	0.89
EgB, EkC2:				
Eldean	Good		Fair	
	Bottom layer	0.89	Thickest layer	0.85
			Bottom layer	0.85
FgA, FgB:				
Fincastle	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FnA, FnB, FnC2:				
Fox	Good		Fair	
	Bottom layer	0.93	Thickest layer	0.89
			Bottom layer	0.89
HkD2, HkE2, HkF2:				
Hickory	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HnE2:				
Hickory	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Morrisville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 17.—Construction Materials, Part I—Continued

Map symbol and soil name	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
JrA, JrB, JrC2:				
Jonesboro	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Rossmoyne	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KnA, KoA:				
Kokomo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
LbA, LbB, LbC2:				
Libre	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
LoC2:				
Loudon	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
LuA, LuB, LuC2, LuD2, LuF2:				
Lumberton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MhB2, MhC2, MhD2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MnE2, MnF2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Thrifton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MoE2, MoF2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Crouse	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MvD2, MvE2:				
Morrisville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 17.—Construction Materials, Part I—Continued

Map symbol and soil name	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
NhC2:				
Nicely	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
OcA, OcB:				
Ockley	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.91	Bottom layer	0.87
OdA, OdB, OdC2:				
Ockley	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
OeA:				
Odell	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Pg:				
Pits, gravel	Not rated		Not rated	
Pk:				
Pits, quarry	Not rated		Not rated	
RcA:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ReA, ReB:				
Reesville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RnA, RoA:				
Ross	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RsA:				
Rossburg	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RuB2:				
Russell	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Xenia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SaA, SaB:				
Sardinia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 17.—Construction Materials, Part I—Continued

Map symbol and soil name	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
ScA, SeA:				
Secondcreek	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ShA:				
Shoals	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.00	Bottom layer	0.50
SmA:				
Sligo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SnA:				
Sloan	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.45	Bottom layer	0.50
SrA:				
Stringley	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.50
	Bottom layer	0.95	Bottom layer	0.91
Sligo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
TaA:				
Taggart	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
TpA, TrA:				
Treaty	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ud:				
Udorthents	Not rated		Not rated	
W:				
Water	Not rated		Not rated	
WaC3, WaD3:				
Wapahani	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WcA, WcB:				
Westboro	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Schaffer	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 17.—Construction Materials, Part I—Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
WmA, WmB:				
Williamsburg--------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
XaA, XaB, XaB2:				
Xenia---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

Table 17.—Construction Materials, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
BhA:						
Birkbeck	Fair		Poor		Fair	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.99
	Water erosion	0.99	Shrink-swell	0.92		
BhB:						
Birkbeck	Fair		Poor		Fair	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.99
	Water erosion	0.99	Shrink-swell	0.94		
BmA:						
Blanchester	Fair		Poor		Poor	
	Low content of organic matter	0.08	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.99	Low strength	0.00		
			Shrink-swell	0.55		
CaD2:						
Casco	Fair		Good		Poor	
	Low content of organic matter	0.12			Slope	0.00
					Rock fragments	0.12
	Droughty	0.94			Hard to reclaim	0.18
CaE2:						
Casco	Fair		Poor		Poor	
	Too sandy	0.01	Slope	0.00	Slope	0.00
	Low content of organic matter	0.12			Rock fragments	0.00
					Too sandy	0.01
	Droughty	0.85			Hard to reclaim	0.18
CbB:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Too clayey	0.06
	Too clayey	0.08	Depth to saturated zone	0.76	Hard to reclaim	0.35
	Low content of organic matter	0.88	Shrink-swell	0.87	Depth to saturated zone	0.76
	Droughty	0.95				
	Water erosion	0.99				
CbB2:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Too clayey	0.06
	Too clayey	0.08	Depth to saturated zone	0.76	Hard to reclaim	0.16
	Droughty	0.71			Depth to saturated zone	0.76
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.99				

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
CcA:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Too clayey	0.06
	Too clayey	0.08	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Low content of organic matter	0.88	Shrink-swell	0.87	Hard to reclaim	0.94
	Water erosion	0.99				
Crosby	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Carbonate content	0.08	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Droughty	0.78	Shrink-swell	0.95	Hard to reclaim	0.71
	Low content of organic matter	0.88				
	Water erosion	0.90				
CeB:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Too clayey	0.06
	Too clayey	0.08	Depth to saturated zone	0.76	Hard to reclaim	0.35
	Low content of organic matter	0.88	Shrink-swell	0.92	Depth to saturated zone	0.76
	Droughty	0.96				
	Water erosion	0.99				
Losantville	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Hard to reclaim	0.00
	Too clayey	0.00	Depth to saturated zone	0.14	Too clayey	0.00
	Carbonate content	0.08	Shrink-swell	0.87	Depth to saturated zone	0.14
	Low content of organic matter	0.12			Rock fragments	0.99
	Water erosion	0.90				
CeB2:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Hard to reclaim	0.05
	Too clayey	0.08	Depth to saturated zone	0.76	Too clayey	0.06
	Droughty	0.50	Shrink-swell	0.87	Depth to saturated zone	0.76
	Low content of organic matter	0.88				
	Water erosion	0.99				
Losantville	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Hard to reclaim	0.00
	Too clayey	0.00	Depth to saturated zone	0.14	Too clayey	0.00
	Carbonate content	0.08	Shrink-swell	0.87	Depth to saturated zone	0.14
	Low content of organic matter	0.12			Rock fragments	0.99
	Water erosion	0.90				
CmA:						
Clermont	Fair		Poor		Poor	
	Low content of organic matter	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too clayey	0.50	Low strength	0.00	Too clayey	0.30
	Too acid	0.68	Shrink-swell	0.91		
	Water erosion	0.90				

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
CpA:						
Coblen	Fair		Fair		Fair	
	Low content of organic matter	0.88	Depth to saturated zone	0.76	Depth to saturated zone	0.76
					Rock fragments	0.97
CrB:						
Corwin	Fair		Poor		Fair	
	Carbonate content	0.68	Low strength	0.00	Hard to reclaim	0.03
	Droughty	0.90	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Water erosion	0.99				
CtA:						
Crosby	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Carbonate content	0.08	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Droughty	0.84	Shrink-swell	0.97	Hard to reclaim	0.84
	Low content of organic matter	0.88				
	Water erosion	0.90				
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Too clayey	0.06
	Too clayey	0.08	Depth to saturated zone	0.76	Hard to reclaim	0.10
	Droughty	0.68	Shrink-swell	0.87	Depth to saturated zone	0.76
	Low content of organic matter	0.88				
	Water erosion	0.99				
CtB:						
Crosby	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Carbonate content	0.08	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Droughty	0.83	Shrink-swell	0.98	Hard to reclaim	0.90
	Low content of organic matter	0.88				
	Water erosion	0.90				
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Too clayey	0.06
	Too clayey	0.08	Depth to saturated zone	0.76	Hard to reclaim	0.20
	Droughty	0.81	Shrink-swell	0.87	Depth to saturated zone	0.76
	Low content of organic matter	0.88				
	Water erosion	0.99				
CuC2:						
Crouse	Fair		Fair		Fair	
	Low content of organic matter	0.08	Shrink-swell	0.98	Slope	0.96
	Water erosion	0.99				
Miamian	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Carbonate content	0.01	Shrink-swell	0.87	Slope	0.96
	Low content of organic matter	0.75				
	Water erosion	0.99				

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
CuD2:						
Crouse	Fair		Fair		Poor	
	Low content of organic matter	0.08	Low strength	0.22	Slope	0.00
	Water erosion	0.99	Shrink-swell	0.87		
Miamian	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Slope	0.00
	Carbonate content	0.01	Shrink-swell	0.87	Too clayey	0.00
	Low content of organic matter	0.75			Hard to reclaim	0.94
	Water erosion	0.99				
	Droughty	0.99				
DhA:						
Dunham	Fair		Poor		Poor	
	Carbonate content	0.46	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.99	Shrink-swell	0.99	Hard to reclaim	0.00
DuA:						
Dunham	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.46	Shrink-swell	0.94	Hard to reclaim	0.00
	Water erosion	0.99				
EgB:						
Eldean	Poor		Good		Poor	
	Carbonate content	0.00			Hard to reclaim	0.00
	Too clayey	0.00			Too clayey	0.00
	Low content of organic matter	0.88			Rock fragments	0.50
	Water erosion	0.99				
	Droughty	0.99				
EkC2:						
Eldean	Poor		Good		Poor	
	Too sandy	0.00			Carbonate content	0.00
	Carbonate content	0.00			Too sandy	0.00
	Low content of organic matter	0.08			Hard to reclaim	0.00
					Rock fragments	0.00
	Droughty	0.45			Slope	0.96
	Water erosion	0.99				
FgA:						
Fincastle	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.04
			Depth to saturated zone	0.04		
	Carbonate content	0.68			Hard to reclaim	0.29
	Water erosion	0.99	Shrink-swell	0.91		
FgB:						
Fincastle	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.04
			Depth to saturated zone	0.04		
	Carbonate content	0.68			Hard to reclaim	0.71
	Water erosion	0.99	Shrink-swell	0.87		

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
FnA:						
Fox------------	Fair		Good		Fair	
	Low content of organic matter	0.12			Hard to reclaim	0.18
	Carbonate content	0.68			Rock fragments	0.28
	Water erosion	0.99			Carbonate content	0.80
FnB:						
Fox------------	Fair		Fair		Fair	
	Low content of organic matter	0.12	Shrink-swell	0.99	Hard to reclaim	0.18
	Carbonate content	0.68			Rock fragments	0.28
	Water erosion	0.99			Carbonate content	0.80
FnC2:						
Fox------------	Fair		Good		Fair	
	Low content of organic matter	0.12			Hard to reclaim	0.18
					Rock fragments	0.28
	Carbonate content	0.68			Carbonate content	0.80
	Water erosion	0.99			Slope	0.96
HkD2:						
Hickory--------	Fair		Poor		Poor	
	Carbonate content	0.01	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.12	Shrink-swell	0.87	Too clayey	0.48
	Too clayey	0.82				
	Water erosion	0.99				
HkE2:						
Hickory--------	Fair		Poor		Poor	
	Carbonate content	0.01	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.12	Slope	0.18	Too clayey	0.48
			Shrink-swell	0.87		
	Too clayey	0.82				
	Water erosion	0.99				
HkF2:						
Hickory--------	Fair		Poor		Poor	
	Carbonate content	0.01	Slope	0.00	Slope	0.00
	Low content of organic matter	0.12	Low strength	0.00	Too clayey	0.48
			Shrink-swell	0.93		
	Too clayey	0.82				
	Water erosion	0.99				
HnE2:						
Hickory--------	Fair		Poor		Poor	
	Carbonate content	0.01	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.12	Slope	0.18	Too clayey	0.48
			Shrink-swell	0.96		
	Too clayey	0.82				
	Water erosion	0.99				
Morrisville----	Fair		Poor		Poor	
	Too clayey	0.08	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.08	Slope	0.18	Too clayey	0.05
			Depth to bedrock	0.29	Rock fragments	0.72
	Stone content	0.46	Stone content	0.63		
	Droughty	0.49	Shrink-swell	0.87		
	Water erosion	0.99				

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
JrA:						
Jonesboro------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Water erosion	0.90	Shrink-swell	0.87		
Rossmoyne------	Fair		Poor		Fair	
	Low content of organic matter	0.08	Low strength	0.00	Hard to reclaim	0.20
	Water erosion	0.90	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Carbonate content	0.92	Shrink-swell	0.87	Too acid	0.88
JrB:						
Jonesboro------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Water erosion	0.90	Shrink-swell	0.87		
Rossmoyne------	Fair		Poor		Fair	
	Low content of organic matter	0.08	Low strength	0.00	Hard to reclaim	0.16
	Water erosion	0.90	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Carbonate content	0.92	Shrink-swell	0.87	Too acid	0.88
JrC2:						
Jonesboro------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Water erosion	0.90	Shrink-swell	0.87	Slope	0.96
Rossmoyne------	Fair		Poor		Fair	
	Low content of organic matter	0.08	Low strength	0.00	Hard to reclaim	0.03
	Water erosion	0.90	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Carbonate content	0.92	Shrink-swell	0.87	Too acid	0.88
					Slope	0.96
KnA:						
Kokomo---------	Fair		Poor		Poor	
	Carbonate content	0.68	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
			Shrink-swell	0.99		
KoA:						
Kokomo---------	Fair		Poor		Poor	
	Too clayey	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.68	Low strength	0.00	Too clayey	0.16
			Shrink-swell	0.94		
LbA:						
Libre----------	Fair		Poor		Fair	
	Low content of organic matter	0.08	Low strength	0.00	Hard to reclaim	0.84
	Water erosion	0.99	Shrink-swell	0.87	Too acid	0.98

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
LbB:						
Libre----------	Fair		Poor		Fair	
	Low content of organic matter	0.08	Low strength	0.00	Hard to reclaim	0.80
	Water erosion	0.99	Shrink-swell	0.87	Too acid	0.98
LbC2:						
Libre----------	Fair		Poor		Fair	
	Low content of organic matter	0.08	Low strength	0.00	Hard to reclaim	0.54
	Water erosion	0.99	Shrink-swell	0.87	Slope	0.96
					Too acid	0.98
LoC2:						
Loudon---------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.18	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Water erosion	0.90	Shrink-swell	0.87	Rock fragments	0.88
	Carbonate content	0.97			Slope	0.96
					Too acid	0.98
LuA:						
Lumberton------	Poor		Poor		Good	
	Carbonate content	0.00	Low strength	0.00		
	Low content of organic matter	0.12	Depth to bedrock	0.87		
	Water erosion	0.99	Shrink-swell	0.99		
LuB:						
Lumberton------	Poor		Poor		Good	
	Carbonate content	0.00	Low strength	0.00		
	Low content of organic matter	0.12	Depth to bedrock	0.16		
	Water erosion	0.99	Shrink-swell	0.98		
LuC2:						
Lumberton------	Poor		Poor		Fair	
	Carbonate content	0.00	Low strength	0.00	Slope	0.96
	Low content of organic matter	0.12	Depth to bedrock	0.01		
	Droughty	0.99				
	Water erosion	0.99				
LuD2:						
Lumberton------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Slope	0.00
	Water erosion	0.99	Depth to bedrock	0.87		
			Shrink-swell	0.87		
LuF2:						
Lumberton------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to bedrock	0.00	Slope	0.00
	Depth to bedrock	0.84	Slope	0.00	Too clayey	0.57
	Droughty	0.97	Low strength	0.00	Depth to bedrock	0.84
	Too clayey	0.98	Shrink-swell	0.87		
	Water erosion	0.99				

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
MhB2:						
Miamian--------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Carbonate content	0.01	Shrink-swell	0.87	Hard to reclaim	0.10
	Droughty	0.43				
	Low content of organic matter	0.75				
	Water erosion	0.99				
MhC2:						
Miamian--------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Carbonate content	0.01	Shrink-swell	0.87	Hard to reclaim	0.29
	Droughty	0.63			Slope	0.96
	Low content of organic matter	0.75				
	Water erosion	0.99				
MhD2:						
Miamian--------	Fair		Poor		Poor	
	Carbonate content	0.01	Low strength	0.00	Slope	0.00
	Too clayey	0.02	Shrink-swell	0.87	Too clayey	0.01
	Droughty	0.14			Hard to reclaim	0.03
	Low content of organic matter	0.75				
	Water erosion	0.99				
MnE2:						
Miamian--------	Fair		Poor		Poor	
	Carbonate content	0.01	Low strength	0.00	Slope	0.00
	Too clayey	0.02	Slope	0.18	Too clayey	0.01
	Low content of organic matter	0.75	Shrink-swell	0.87	Hard to reclaim	0.99
	Water erosion	0.99				
Thrifton-------	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Carbonate content	0.08	Depth to saturated zone	0.14	Hard to reclaim	0.00
	Low content of organic matter	0.18	Slope	0.18	Depth to saturated zone	0.14
			Shrink-swell	0.87	Carbonate content	0.80
MnF2:						
Miamian--------	Fair		Poor		Poor	
	Carbonate content	0.01	Slope	0.00	Slope	0.00
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.75	Shrink-swell	0.87	Hard to reclaim	0.99
	Water erosion	0.99				
Thrifton-------	Poor		Poor		Poor	
	Droughty	0.00	Slope	0.00	Slope	0.00
	Carbonate content	0.08	Low strength	0.00	Hard to reclaim	0.00
	Low content of organic matter	0.18	Depth to saturated zone	0.14	Depth to saturated zone	0.14
			Shrink-swell	0.87	Carbonate content	0.80

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
MoE2:						
Miamian--------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Slope	0.00
	Carbonate content	0.01	Slope	0.18	Too clayey	0.00
	Low content of organic matter	0.75	Shrink-swell	0.87	Hard to reclaim	0.80
	Droughty	0.99				
	Water erosion	0.99				
Crouse---------	Fair		Fair		Poor	
	Low content of organic matter	0.08	Slope	0.18	Slope	0.00
			Low strength	0.22		
	Water erosion	0.99	Shrink-swell	0.87		
MoF2:						
Miamian--------	Fair		Poor		Poor	
	Carbonate content	0.01	Slope	0.00	Slope	0.00
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.75	Shrink-swell	0.87	Hard to reclaim	0.46
	Droughty	0.80				
	Water erosion	0.99				
Crouse---------	Fair		Poor		Poor	
	Low content of organic matter	0.08	Slope	0.00	Slope	0.00
			Low strength	0.22		
	Water erosion	0.99	Shrink-swell	0.87		
MvD2:						
Morrisville----	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.08	Depth to bedrock	0.16	Too clayey	0.01
			Stone content	0.41	Rock fragments	0.72
	Stone content	0.31	Shrink-swell	0.87	Depth to saturated zone	0.98
	Droughty	0.42	Depth to saturated zone	0.98		
	Water erosion	0.99				
MvE2:						
Morrisville----	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.08	Slope	0.18	Too clayey	0.00
			Stone content	0.41	Rock fragments	0.72
	Stone content	0.22	Depth to bedrock	0.87	Depth to saturated zone	0.98
	Droughty	0.76	Shrink-swell	0.87		0.98
	Water erosion	0.99				
NhC2:						
Nicely---------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.53
			Depth to saturated zone	0.53		
	Too clayey	0.98			Too clayey	0.57
	Water erosion	0.99	Shrink-swell	0.87	Rock fragments	0.72
					Too acid	0.88
					Slope	0.96
OcA:						
Ockley---------	Fair		Fair		Poor	
	Carbonate content	0.08	Shrink-swell	0.87	Rock fragments	0.00
	Low content of organic matter	0.88			Hard to reclaim	0.68
	Water erosion	0.99				

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
OcB:						
Ockley	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Hard to reclaim	0.68
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.99				
OdA:						
Ockley	Fair		Fair		Good	
	Low content of organic matter	0.12	Shrink-swell	0.92		
	Carbonate content	0.97				
	Water erosion	0.99				
OdB:						
Ockley	Fair		Poor		Good	
	Low content of organic matter	0.50	Low strength	0.00		
			Shrink-swell	0.87		
	Carbonate content	0.97				
	Water erosion	0.99				
OdC2:						
Ockley	Fair		Fair		Fair	
	Low content of organic matter	0.12	Shrink-swell	0.87	Slope	0.96
	Carbonate content	0.97				
	Water erosion	0.99				
OeA:						
Odell	Fair		Poor		Poor	
	Low content of organic matter	0.68	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Low strength	0.78		
			Shrink-swell	0.97		
Pg:						
Pits, gravel	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry	Not rated		Not rated		Not rated	
RcA:						
Randolph	Fair		Poor		Poor	
	Too clayey	0.08	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Low strength	0.00		
			Depth to saturated zone	0.00	Too clayey	0.06
	Depth to bedrock	0.97			Rock fragments	0.97
	Water erosion	0.99	Shrink-swell	0.93	Depth to bedrock	0.97
ReA:						
Reesville	Fair		Poor		Poor	
	Carbonate content	0.68	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Depth to saturated zone	0.00		
	Water erosion	0.99	Shrink-swell	0.94		

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
ReB:						
Reesville------	Fair		Poor		Poor	
	Carbonate content	0.68	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.88	Depth to saturated zone	0.00		
	Water erosion	0.99	Shrink-swell	0.99		
RnA, RoA:						
Ross-----------	Good		Good		Fair	
					Hard to reclaim	0.98
RsA:						
Rossburg-------	Fair		Good		Good	
	Water erosion	0.99				
RuB2:						
Russell--------	Fair		Poor		Fair	
	Low content of organic matter	0.50	Low strength	0.00	Hard to reclaim	0.20
	Carbonate content	0.68	Shrink-swell	0.87	Too acid	0.98
	Water erosion	0.99				
Xenia----------	Fair		Poor		Fair	
	Carbonate content	0.16	Low strength	0.00	Hard to reclaim	0.20
	Low content of organic matter	0.68	Shrink-swell	0.87	Depth to saturated zone	0.98
	Water erosion	0.99	Depth to saturated zone	0.98		
SaA:						
Sardinia-------	Fair		Poor		Fair	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.76
	Water erosion	0.99	Depth to saturated zone	0.76		
			Shrink-swell	0.87		
SaB:						
Sardinia-------	Fair		Poor		Fair	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.76
	Water erosion	0.99	Depth to saturated zone	0.76	Hard to reclaim	0.92
			Shrink-swell	0.87		
ScA:						
Secondcreek----	Fair		Poor		Poor	
	Water erosion	0.99	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
			Shrink-swell	0.46		
SeA:						
Secondcreek----	Fair		Poor		Poor	
	Water erosion	0.99	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
			Shrink-swell	0.32		
ShA:						
Shoals---------	Fair		Poor		Poor	
	Water erosion	0.99	Depth to saturated zone	0.00	Depth to saturated zone	0.00

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
SmA:						
Sligo	Fair		Fair		Poor	
	Water erosion	0.99	Low strength	0.22	Hard to reclaim	0.00
SnA:						
Sloan	Good		Poor		Poor	
			Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00	Hard to reclaim	0.98
SrA:						
Stringley	Fair		Good		Poor	
	Low content of organic matter	0.01			Hard to reclaim	0.00
	Carbonate content	0.01			Carbonate content	0.01
	Too sandy	0.96			Too sandy	0.96
Sligo	Fair		Fair		Poor	
	Water erosion	0.99	Low strength	0.22	Hard to reclaim	0.00
TaA:						
Taggart	Fair		Fair		Fair	
	Low content of organic matter	0.12	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Water erosion	0.68	Low strength	0.78		
TpA:						
Treaty	Fair		Poor		Poor	
	Carbonate content	0.46	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.99	Shrink-swell	0.94	Hard to reclaim	0.99
TrA:						
Treaty	Fair		Poor		Poor	
	Carbonate content	0.46	Depth to saturated zone	0.00	Hard to reclaim	0.00
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.00
	Too clayey	0.95	Shrink-swell	0.87	Too clayey	0.95
	Water erosion	0.99				
Ud:						
Udorthents	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaC3:						
Wapahani	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Hard to reclaim	0.00
	Carbonate content	0.08	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Low content of organic matter	0.12	Shrink-swell	0.87	Slope	0.96
	Water erosion	0.90				
Miamian	Fair		Poor		Fair	
	Carbonate content	0.01	Low strength	0.00	Too clayey	0.01
	Too clayey	0.02	Shrink-swell	0.87	Hard to reclaim	0.35
	Droughty	0.50			Slope	0.96
	Low content of organic matter	0.75				
	Water erosion	0.99				

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
WaD3:						
Wapahani-------	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Hard to reclaim	0.00
	Carbonate content	0.08	Depth to saturated zone	0.14	Slope	0.00
	Low content of organic matter	0.12	Shrink-swell	0.87	Depth to saturated zone	0.14
	Water erosion	0.90				
Miamian--------	Fair		Poor		Poor	
	Carbonate content	0.01	Low strength	0.00	Slope	0.00
	Too clayey	0.02	Shrink-swell	0.87	Too clayey	0.01
	Droughty	0.13			Hard to reclaim	0.10
	Low content of organic matter	0.75				
	Water erosion	0.99				
WcA:						
Westboro-------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.04
	Water erosion	0.90	Depth to saturated zone	0.04	Too acid	0.98
			Shrink-swell	0.89		
Schaffer-------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.37	Depth to saturated zone	0.00	Hard to reclaim	0.20
			Shrink-swell	0.96	Too acid	0.98
WcB:						
Westboro-------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.04
	Water erosion	0.90	Depth to saturated zone	0.04	Too acid	0.98
			Shrink-swell	0.87		
Schaffer-------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.37	Depth to saturated zone	0.00	Hard to reclaim	0.35
			Shrink-swell	0.96	Too acid	0.98
WmA:						
Williamsburg---	Fair		Poor		Fair	
	Low content of organic matter	0.32	Low strength	0.00	Hard to reclaim	0.82
	Water erosion	0.99	Shrink-swell	0.92	Too acid	0.98
WmB:						
Williamsburg---	Fair		Fair		Fair	
	Low content of organic matter	0.24	Low strength	0.78	Hard to reclaim	0.98
	Water erosion	0.99	Shrink-swell	0.94	Too acid	0.98
XaA:						
Xenia----------	Fair		Poor		Fair	
	Carbonate content	0.16	Low strength	0.00	Hard to reclaim	0.84
	Low content of organic matter	0.50	Shrink-swell	0.89	Depth to saturated zone	0.98
	Water erosion	0.99	Depth to saturated zone	0.98		

Table 17.—Construction Materials, Part II—Continued

Map symbol and soil name	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
XaB:						
Xenia----------	Fair		Poor		Fair	
	Carbonate content	0.16	Low strength	0.00	Hard to reclaim	0.84
	Low content of organic matter	0.68	Shrink-swell	0.87	Depth to saturated zone	0.98
	Water erosion	0.99	Depth to saturated zone	0.98		
XaB2:						
Xenia----------	Fair		Poor		Fair	
	Carbonate content	0.16	Low strength	0.00	Hard to reclaim	0.35
	Low content of organic matter	0.50	Shrink-swell	0.87	Depth to saturated zone	0.98
	Water erosion	0.99	Depth to saturated zone	0.98		

Table 18.—Building Site Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BhA:						
Birkbeck	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.97	Shrink-swell	0.50
			Shrink-swell	0.50		
BhB:						
Birkbeck	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.97	Shrink-swell	0.50
					Slope	0.10
			Shrink-swell	0.50		
BmA:						
Blanchester	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Shrink-swell	1.00	Ponding	1.00
	Shrink-swell	0.50	Ponding	1.00	Shrink-swell	0.50
CaD2, CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
CbB, CbB2:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Slope	0.10
			Shrink-swell	0.50	Depth to saturated zone	0.10
CcA:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Depth to saturated zone	0.10
			Shrink-swell	0.50		
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
CeB, CeB2:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Slope	0.10
			Shrink-swell	0.50	Depth to saturated zone	0.10
Losantville	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10

Table 18.—Building Site Development, Part I—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
CmA:						
Clermont	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
CpA:						
Coblen	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Depth to saturated zone	0.10
CrB:						
Corwin	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.44	Shrink-swell	0.50	Depth to saturated zone	0.44
					Slope	0.10
CtA, CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
CuC2:						
Crouse	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	0.72	Slope	1.00
	Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
			Slope	0.04		
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Slope	1.00
	Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
			Slope	0.04		
CuD2:						
Crouse	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.72	Shrink-swell	0.50
			Shrink-swell	0.50		
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		

Table 18.—Building Site Development, Part I—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
DhA:						
Dunham------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
DuA:						
Dunham------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
EgB:						
Eldean------------	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
					Slope	0.10
EkC2:						
Eldean------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
FgA, FgB:						
Fincastle---------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
FnA:						
Fox---------------	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
FnB:						
Fox---------------	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
					Slope	0.10
FnC2:						
Fox---------------	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Slope	0.04	Slope	1.00
	Slope	0.04			Shrink-swell	0.50
HkD2, HkE2, HkF2:						
Hickory-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.15		
HnE2:						
Hickory-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.15		

Table 18.—Building Site Development, Part I—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
HnE2:						
Morrisville	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Slippage	1.00	Slippage	1.00	Slippage	1.00
	Depth to bedrock	0.71	Depth to saturated zone	0.95	Depth to bedrock	0.71
	Shrink-swell	0.50	Depth to bedrock	0.71	Shrink-swell	0.50
			Shrink-swell	0.50		
JrA:						
Jonesboro	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.44	Shrink-swell	0.50	Depth to saturated zone	0.44
Rossmoyne	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.44	Shrink-swell	0.50	Depth to saturated zone	0.44
JrB:						
Jonesboro	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.44	Shrink-swell	0.50	Depth to saturated zone	0.44
					Slope	0.10
Rossmoyne	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.44	Shrink-swell	0.50	Depth to saturated zone	0.44
					Slope	0.10
JrC2:						
Jonesboro	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.44	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.04	Slope	0.04	Depth to saturated zone	0.44
Rossmoyne	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.44	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.04	Slope	0.04	Depth to saturated zone	0.44
KnA, KoA:						
Kokomo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
LbA:						
Libre	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		

Table 18.—Building Site Development, Part I—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
LbB:						
Libre	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50	Slope	0.10
LbC2:						
Libre	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Slope	1.00
	Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
			Slope	0.04		
LoC2:						
Loudon	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.44	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.04	Slope	0.04	Depth to saturated zone	0.44
LuA:						
Lumberton	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
	Depth to bedrock	0.13	Depth to bedrock	0.13	Depth to bedrock	0.13
LuB:						
Lumberton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.84	Depth to bedrock	0.84	Depth to bedrock	0.84
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
LuC2:						
Lumberton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.99	Depth to bedrock	0.99	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Depth to bedrock	0.99
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
LuD2:						
Lumberton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
	Depth to bedrock	0.13	Depth to bedrock	0.13	Depth to bedrock	0.13
LuF2:						
Lumberton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MhB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50	Slope	0.10

Table 18.—Building Site Development, Part I—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
MhC2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Slope	1.00
	Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
			Slope	0.04		
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
MnE2, MnF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
Thrifton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MoE2, MoF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
Crouse	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.24		
MvD2:						
Morrisville	Very limited		Very limited		Very limited	
	Slippage	1.00	Slippage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Slippage	1.00
	Depth to bedrock	0.84	Depth to saturated zone	0.99	Depth to bedrock	0.84
	Shrink-swell	0.50	Depth to bedrock	0.84	Shrink-swell	0.50
			Shrink-swell	0.50		
MvE2:						
Morrisville	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Slippage	1.00	Slippage	1.00	Slippage	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
	Depth to bedrock	0.13	Shrink-swell	0.50	Depth to bedrock	0.13
			Depth to bedrock	0.13		

Table 18.—Building Site Development, Part I—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
NhC2:						
Nicely	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.44	Shrink-swell	0.50	Shrink-swell	0.50
	Slope	0.04	Slope	0.04	Depth to saturated zone	0.44
OcA:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
OcB:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
OdA:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.15		
OdB:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.15	Slope	0.10
OdC2:						
Ockley	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
	Slope	0.04	Depth to saturated zone	0.15	Shrink-swell	0.50
			Slope	0.04		
OeA:						
Odell	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Pg:						
Pits, gravel	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
ReA, ReB:						
Reesville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 18.—Building Site Development, Part I—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
RnA, RoA:						
Ross	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.15		
RsA:						
Rossburg	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.24		
RuB2:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.24	Slope	0.10
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50	Slope	0.10
SaA:						
Sardinia	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
SaB:						
Sardinia	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Slope	0.10
					Depth to saturated zone	0.10
ScA, SeA:						
Secondcreek	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
ShA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
SmA:						
Sligo	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.95		

Table 18.—Building Site Development, Part I—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
SrA:						
Stringley	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.24		
Sligo	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.95		
TaA:						
Taggart	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
TpA, TrA:						
Treaty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Ud:						
Udorthents	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaC3:						
Wapahani	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Depth to saturated zone	0.99
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Slope	1.00
	Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
			Slope	0.04		
WaD3:						
Wapahani	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.99	Slope	1.00	Depth to saturated zone	0.99
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		

Table 18.—Building Site Development, Part I—Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
WcA, WcB:						
Westboro----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Schaffer----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
WmA:						
Williamsburg------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
WmB:						
Williamsburg------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
XaA:						
Xenia-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
XaB, XaB2:						
Xenia-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
					Slope	0.10
			Shrink-swell	0.50		

Table 18.—Building Site Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BhA, BhB:						
Birkbeck	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.97		
	Low strength	1.00				
	Shrink-swell	0.50				
BmA:						
Blanchester	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00				
	Ponding	1.00				
	Shrink-swell	0.50				
CaD2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Content of large stones	0.01
CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.01
					Content of large stones	0.01
CbB, CbB2:						
Celina	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
CcA:						
Celina	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
Crosby	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	1.00	Too clayey	0.50		
	Shrink-swell	0.50				

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
CeB:						
Celina	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
Losantville	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to dense layer	0.50	Droughty	0.67
	Shrink-swell	0.50				
	Frost action	0.50				
CeB2:						
Celina	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
Losantville	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Droughty	0.86
	Depth to saturated zone	0.75	Depth to dense layer	0.50	Depth to saturated zone	0.75
	Shrink-swell	0.50				
	Frost action	0.50				
CmA:						
Clermont	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00				
	Ponding	1.00				
	Shrink-swell	0.50				
CpA:						
Coblen	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	0.90				
	Flooding	0.40				
	Depth to saturated zone	0.03				
CrB:						
Corwin	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50				
	Depth to saturated zone	0.19				

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
CtA, CtB:						
Crosby----------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	1.00	Too clayey	0.50		
	Shrink-swell	0.50				
Celina----------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
CuC2:						
Crouse----------	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	0.72	Slope	0.04
	Low strength	0.50	Slope	0.04		
	Shrink-swell	0.50				
	Slope	0.04				
Miamian---------	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.95	Slope	0.04
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Too clayey	0.50		
	Slope	0.04	Slope	0.04		
CuD2:						
Crouse----------	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.72		
	Low strength	0.50				
	Shrink-swell	0.50				
Miamian---------	Very limited		Very limited		Very limited	
	Low strength	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.95		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Too clayey	0.50		
DhA, DuA:						
Dunham----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Frost action	1.00	Ponding	1.00		
	Ponding	1.00				
	Shrink-swell	0.50				
EgB:						
Eldean----------	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Too clayey	0.50		
	Frost action	0.50				

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
EkC2:						
Eldean	Somewhat limited		Very limited		Very limited	
	Frost action	0.50	Cutbanks cave	1.00	Carbonate content	1.00
	Slope	0.04	Slope	0.04	Droughty	0.35
					Slope	0.04
					Gravel content	0.04
					Content of large stones	0.01
FgA, FgB:						
Fincastle	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Low strength	1.00				
	Depth to saturated zone	0.94				
	Shrink-swell	0.50				
FnA, FnB:						
Fox	Somewhat limited		Very limited		Not limited	
	Shrink-swell	0.50	Cutbanks cave	1.00		
	Frost action	0.50				
FnC2:						
Fox	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Cutbanks cave	1.00	Slope	0.04
	Frost action	0.50	Slope	0.04		
	Slope	0.04				
HkD2, HkE2:						
Hickory	Very limited		Very limited		Very limited	
	Low strength	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.15		
	Shrink-swell	0.50				
	Frost action	0.50				
HkF2:						
Hickory	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	0.15		
	Shrink-swell	0.50				
	Frost action	0.50				
HnE2:						
Hickory	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	0.15		
	Shrink-swell	0.50				
	Frost action	0.50				
Morrisville	Very limited		Very limited		Very limited	
	Slippage	1.00	Slippage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Droughty	0.01
	Low strength	1.00	Depth to saturated zone	0.95		
	Depth to bedrock	0.71	Depth to bedrock	0.71		
	Shrink-swell	0.50				

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
JrA, JrB:						
Jonesboro	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Low strength	1.00	Too clayey	0.50		
	Shrink-swell	0.50				
	Depth to saturated zone	0.19				
Rossmoyne	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.19				
JrC2:						
Jonesboro	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Low strength	1.00	Too clayey	0.50	Slope	0.04
	Shrink-swell	0.50	Slope	0.04		
	Depth to saturated zone	0.19				
	Slope	0.04				
Rossmoyne	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Low strength	1.00	Slope	0.04	Slope	0.04
	Shrink-swell	0.50			Droughty	0.01
	Depth to saturated zone	0.19				
	Slope	0.04				
KnA, KoA:						
Kokomo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00				
	Ponding	1.00				
	Shrink-swell	0.50				
LbA, LbB:						
Libre	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.95		
	Low strength	1.00				
	Shrink-swell	0.50				
LbC2:						
Libre	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	0.95	Slope	0.04
	Low strength	1.00	Slope	0.04		
	Shrink-swell	0.50				
	Slope	0.04				

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
LoC2:						
Loudon---------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Low strength	1.00	Too clayey	0.50	Slope	0.04
	Shrink-swell	0.50	Slope	0.04		
	Depth to saturated zone	0.19				
	Slope	0.04				
LuA:						
Lumberton------	Very limited		Somewhat limited		Very limited	
	Low strength	1.00	Depth to bedrock	0.13	Carbonate content	1.00
	Frost action	1.00				
	Shrink-swell	0.50				
	Depth to bedrock	0.13				
LuB:						
Lumberton------	Very limited		Somewhat limited		Very limited	
	Low strength	1.00	Depth to bedrock	0.84	Carbonate content	1.00
	Frost action	1.00				
	Depth to bedrock	0.84				
	Shrink-swell	0.50				
LuC2:						
Lumberton------	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Frost action	1.00	Depth to bedrock	0.99	Slope	0.04
	Depth to bedrock	0.99	Slope	0.04		
	Shrink-swell	0.50				
	Slope	0.04				
LuD2:						
Lumberton------	Very limited		Very limited		Very limited	
	Low strength	1.00	Slope	1.00	Slope	1.00
	Frost action	1.00	Depth to bedrock	0.13		
	Slope	1.00				
	Shrink-swell	0.50				
	Depth to bedrock	0.13				
LuF2:						
Lumberton------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to bedrock	0.16
	Low strength	1.00				
	Frost action	1.00				
	Shrink-swell	0.50				
MhB2:						
Miamian--------	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.95		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Too clayey	0.50		

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
MhC2:						
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.95	Slope	0.04
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Too clayey	0.50		
	Slope	0.04	Slope	0.04		
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Low strength	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.95	Droughty	0.03
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50				
MnE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	0.95		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50				
Thrifton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to dense layer	0.50	Droughty	0.63
	Shrink-swell	0.50				
	Frost action	0.50				
MnF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	0.95		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50				
Thrifton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to dense layer	0.50	Droughty	0.72
	Shrink-swell	0.50				
	Frost action	0.50				
MoE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	0.95		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Too clayey	0.50		

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
MoE2:						
Crouse	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	1.00	Depth to saturated zone	0.24		
	Low strength	0.50				
	Shrink-swell	0.50				
MoF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	0.95		
	Shrink-swell	0.50				
	Frost action	0.50	Depth to dense layer	0.50		
Crouse	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	1.00	Depth to saturated zone	0.24		
	Low strength	0.50				
	Shrink-swell	0.50				
MvD2:						
Morrisville	Very limited		Very limited		Very limited	
	Slippage	1.00	Slippage	1.00	Slope	1.00
	Low strength	1.00	Slope	1.00	Droughty	0.01
	Slope	1.00	Depth to saturated zone	0.99		
	Depth to bedrock	0.84				
	Shrink-swell	0.50	Depth to bedrock	0.84		
MvE2:						
Morrisville	Very limited		Very limited		Very limited	
	Slippage	1.00	Slippage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Droughty	0.03
	Low strength	1.00	Depth to saturated zone	0.99		
	Shrink-swell	0.50				
	Frost action	0.50	Too clayey	0.50		
			Depth to bedrock	0.13		
NhC2:						
Nicely	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	0.50				
	Frost action	0.50	Slope	0.04	Slope	0.04
	Depth to saturated zone	0.19				
	Slope	0.04				
OcA:						
Ockley	Somewhat limited		Not limited		Not limited	
	Shrink-swell	0.50				
	Frost action	0.50				
OcB:						
Ockley	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
OdA, OdB:						
Ockley	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.15		
	Shrink-swell	0.50				
	Frost action	0.50				
OdC2:						
Ockley	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.15	Slope	0.04
	Shrink-swell	0.50	Slope	0.04		
	Frost action	0.50				
	Slope	0.04				
OeA:						
Odell	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00				
	Shrink-swell	0.50				
	Low strength	0.28				
Pg:						
Pits, gravel	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.03
	Low strength	1.00		1.00		
	Depth to saturated zone	1.00				
	Shrink-swell	0.50				
ReA, ReB:						
Reesville	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00				
	Depth to saturated zone	1.00				
	Shrink-swell	0.50				
RnA:						
Ross	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Flooding	0.60	Flooding	0.60
	Low strength	0.50	Depth to saturated zone	0.15		
	Frost action	0.50				
RoA:						
Ross	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.80	Flooding	1.00
	Frost action	0.50	Depth to saturated zone	0.15		
RsA:						
Rossburg	Somewhat limited		Somewhat limited		Not limited	
	Frost action	0.50	Depth to saturated zone	0.24		
	Flooding	0.40				

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RuB2:						
Russell	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to dense layer	0.50		
	Frost action	1.00	Depth to saturated zone	0.24		
	Shrink-swell	0.50				
Xenia	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Frost action	1.00				
	Shrink-swell	0.50				
SaA, SaB:						
Sardinia	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
ScA, SeA:						
Secondcreek	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Ponding	1.00	Ponding	1.00
	Frost action	1.00	Too clayey	0.50		
	Shrink-swell	1.00				
	Ponding	1.00				
ShA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Flooding	0.60
	Low strength	1.00	Flooding	0.60		
	Depth to saturated zone	1.00				
	Shrink-swell	0.50				
SmA:						
Sligo	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Low strength	0.50	Depth to saturated zone	0.95		
	Frost action	0.50	Flooding	0.60		
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.60	Flooding	0.60
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				
SrA:						
Stringley	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Frost action	0.50	Flooding	0.60		
			Depth to saturated zone	0.24		

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
SrA:						
Sligo----------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Low strength	0.50	Depth to saturated zone	0.95		
	Frost action	0.50	Flooding	0.60		
TaA:						
Taggart--------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Depth to saturated zone	0.94				
	Low strength	0.28				
TpA, TrA:						
Treaty---------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00				
	Ponding	1.00				
	Shrink-swell	0.50				
Ud:						
Udorthents-----	Not rated		Not rated		Not rated	
W:						
Water----------	Not rated		Not rated		Not rated	
WaC3:						
Wapahani-------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Droughty	0.94
	Depth to saturated zone	0.75	Depth to dense layer	0.50	Depth to saturated zone	0.75
	Shrink-swell	0.50	Slope	0.04	Slope	0.04
	Frost action	0.50				
	Slope	0.04				
Miamian--------	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	0.95	Slope	0.04
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Slope	0.04		
	Slope	0.04				
WaD3:						
Wapahani-------	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Droughty	0.91
	Depth to saturated zone	0.75	Depth to dense layer	0.50	Depth to saturated zone	0.75
	Shrink-swell	0.50				
	Frost action	0.50				
Miamian--------	Very limited		Very limited		Very limited	
	Low strength	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.95	Droughty	0.04
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50				

Table 18.—Building Site Development, Part II—Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
WcA, WcB:						
Westboro-------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Low strength	1.00				
	Depth to saturated zone	0.94				
	Shrink-swell	0.50				
Schaffer-------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	1.00				
	Shrink-swell	0.50				
WmA, WmB:						
Williamsburg---	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
XaA, XaB, XaB2:						
Xenia----------	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Frost action	1.00				
	Shrink-swell	0.50				

Table 19.—Sanitary Facilities, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Septic tank absorption fields: Value	Sewage lagoons: Rating class and limiting features	Sewage lagoons: Value
BhA:				
Birkbeck	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
BhB:				
Birkbeck	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
BmA:				
Blanchester	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
CaD2, CaE2:				
Casco	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
CbB, CbB2:				
Celina	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32
CcA:				
Celina	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
Crosby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
CeB, CeB2:				
Celina	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
CeB, CeB2:				
Losantville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32
CmA:				
Clermont	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
CpA:				
Coblen	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
	Flooding	0.40	Flooding	0.40
CrB:				
Corwin	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.32
CtA:				
Crosby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
Celina	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
CtB:				
Crosby	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.08
Celina	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.08

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
CuC2:				
Crouse--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00
	Restricted permeability	0.46	Depth to saturated zone	0.90
	Slope	0.04	Seepage	0.53
Miamian-------------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04		
CuD2:				
Crouse--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.90
	Restricted permeability	0.46	Seepage	0.53
Miamian-------------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
DhA, DuA:				
Dunham--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.46		
EgB:				
Eldean--------------	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.32
EkC2:				
Eldean--------------	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.04	Slope	1.00
FgA:				
Fincastle-----------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
FgB:				
Fincastle	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.08
FnA:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
FnB:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.32
	Restricted permeability	0.46		
FnC2:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	1.00
	Restricted permeability	0.46		
	Slope	0.04		
HkD2, HkE2, HkF2:				
Hickory	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
	Depth to saturated zone	0.40		
HnE2:				
Hickory	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
	Depth to saturated zone	0.40		
Morrisville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
			Depth to bedrock	0.71
	Slope	1.00		
	Slippage	1.00		
	Depth to bedrock	0.89		
JrA:				
Jonesboro	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
JrA:				
Rossmoyne	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
JrB:				
Jonesboro	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.32
Rossmoyne	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
JrC2:				
Jonesboro	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04	Seepage	0.53
Rossmoyne	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04	Seepage	0.53
KnA, KoA:				
Kokomo	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
LbA:				
Libre	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
LbB:				
Libre	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
LbC2:				
Libre	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	1.00
			Seepage	0.53
	Slope	0.04		
LoC2:				
Loudon	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04		
	Depth to bedrock	0.02		
LuA:				
Lumberton	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
			Depth to bedrock	0.13
	Depth to bedrock	0.59		
LuB:				
Lumberton	Very limited		Somewhat limited	
	Restricted permeability	1.00	Depth to bedrock	0.84
			Seepage	0.53
	Depth to bedrock	0.94	Slope	0.32
LuC2:				
Lumberton	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
			Depth to bedrock	0.99
	Depth to bedrock	1.00	Seepage	0.53
	Slope	0.04		
LuD2:				
Lumberton	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
			Seepage	0.53
	Slope	1.00	Depth to bedrock	0.13
	Depth to bedrock	0.59		
LuF2:				
Lumberton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to bedrock	1.00
			Slope	1.00
	Depth to bedrock	1.00	Seepage	0.53
	Slope	1.00		
MhB2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MhC2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04		
MhD2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
MnE2, MnF2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
Thrifton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
MoE2, MoF2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
Crouse	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.65	Seepage	0.53
	Restricted permeability	0.46	Depth to saturated zone	0.02
MvD2:				
Morrisville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slippage	1.00	Depth to bedrock	0.84
	Slope	1.00		
	Depth to bedrock	0.94		

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MvE2:				
Morrisville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00	Depth to bedrock	0.13
	Slippage	1.00		
	Depth to bedrock	0.59		
NhC2:				
Nicely	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04	Seepage	0.53
OcA:				
Ockley	Not limited		Very limited	
			Seepage	1.00
OcB:				
Ockley	Somewhat limited		Very limited	
	Restricted permeability	0.46	Seepage	1.00
			Slope	0.32
OdA:				
Ockley	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
	Depth to saturated zone	0.40		
OdB:				
Ockley	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.32
	Depth to saturated zone	0.40		
OdC2:				
Ockley	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	1.00
	Depth to saturated zone	0.40		
	Slope	0.04		
OeA:				
Odell	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
Pg:				
Pits, gravel	Not rated		Not rated	
Pk:				
Pits, quarry	Not rated		Not rated	
RcA:				
Randolph	Very limited		Very limited	
	Restricted permeability	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
ReA:				
Reesville	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
ReB:				
Reesville	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.08
RnA, RoA:				
Ross	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
	Depth to saturated zone	0.40		
RsA:				
Rossburg	Somewhat limited		Very limited	
	Depth to saturated zone	0.65	Seepage	1.00
	Restricted permeability	0.46	Flooding	0.40
	Flooding	0.40	Depth to saturated zone	0.02
RuB2:				
Russell	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
	Depth to saturated zone	0.65	Slope	0.32
			Depth to saturated zone	0.02
Xenia	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.32

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
SaA:				
Sardinia	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
SaB:				
Sardinia	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
ScA, SeA:				
Secondcreek	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
SeA:				
Secondcreek	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
ShA:				
Shoals	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
SmA:				
Sligo	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
SnA:				
Sloan	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.46	Seepage	0.53

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
SrA:				
Stringley----------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
	Depth to saturated zone	0.65	Depth to saturated zone	0.02
Sligo--------------	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
TaA:				
Taggart------------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
TpA:				
Treaty-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Seepage	0.53
TrA:				
Treaty-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.46	Seepage	0.53
Ud:				
Udorthents---------	Not rated		Not rated	
W:				
Water--------------	Not rated		Not rated	
WaC3:				
Wapahani-----------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04		
Miamian------------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04		

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
WaD3:				
Wapahani	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
WcA:				
Westboro	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
Schaffer	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
WcB:				
Westboro	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.08
Schaffer	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.08
WmA:				
Williamsburg	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
WmB:				
Williamsburg	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
XaA:				
Xenia	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53

Table 19.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
XaB, XaB2:				
Xenia---------------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.32

Table 19.—Sanitary Facilities, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
BhA, BhB:						
Birkbeck	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.14
BmA:						
Blanchester	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too clayey	0.50			Too clayey	0.50
CaD2:						
Casco	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00	Slope	1.00	Slope	1.00
	Slope	1.00			Too sandy	0.50
					Gravel content	0.10
CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00			Too sandy	0.50
					Gravel content	0.11
CbB, CbB2:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
CcA:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
CeB, CeB2:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
Losantville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00			Depth to saturated zone	1.00

Table 19.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CmA:						
Clermont	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too clayey	0.50			Too clayey	0.50
CpA:						
Coblen	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
	Seepage	1.00	Flooding	0.40		
	Flooding	0.40				
CrB:						
Corwin	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Too clayey	0.50			Too clayey	0.50
CtA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
CuC2:						
Crouse	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04	Depth to saturated zone	0.01	Slope	0.04
	Depth to saturated zone	0.01				
Miamian	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	0.44	Too clayey	1.00
	Depth to saturated zone	0.44	Slope	0.04	Depth to saturated zone	0.09
	Slope	0.04			Slope	0.04

Table 19.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
CuD2:						
Crouse	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50	Depth to saturated zone	0.01	Too clayey	0.50
	Depth to saturated zone	0.01				
Miamian	Very limited		Very limited		Very limited	
	Too clayey	1.00	Slope	1.00	Too clayey	1.00
	Slope	1.00	Depth to saturated zone	0.44	Slope	1.00
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
DhA:						
Dunham	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Ponding	1.00	Seepage	1.00
	Ponding	1.00			Ponding	1.00
	Too clayey	0.50			Too clayey	0.50
DuA:						
Dunham	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Ponding	1.00	Seepage	1.00
	Too sandy	1.00			Ponding	1.00
	Ponding	1.00			Too sandy	0.50
EgB:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Carbonate content	1.00
					Gravel content	0.78
EkC2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	0.04	Carbonate content	1.00
	Slope	0.04			Gravel content	1.00
					Slope	0.04
FgA, FgB:						
Fincastle	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
FnA:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00			Too sandy	0.50
					Gravel content	0.05
FnB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00			Too sandy	0.50
					Too clayey	0.50
					Gravel content	0.04

Table 19.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FnC2:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00	Slope	0.04	Too sandy	0.50
	Slope	0.04			Gravel content	0.07
					Slope	0.04
HkD2:						
Hickory	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Too clayey	0.50
	Too clayey	0.50				
HkE2, HkF2:						
Hickory	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
HnE2:						
Hickory	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
Morrisville	Very limited		Very limited		Very limited	
	Slope	1.00	Slippage	1.00	Slope	1.00
	Depth to bedrock	1.00	Slope	1.00	Hard to compact	1.00
	Too clayey	0.50	Depth to bedrock	0.71	Depth to bedrock	0.71
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Too clayey	0.50
					Depth to saturated zone	0.09
JrA, JrB:						
Jonesboro	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	0.86
Rossmoyne	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Too clayey	0.50			Too clayey	0.50
JrC2:						
Jonesboro	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00	Slope	0.04	Depth to saturated zone	0.86
	Slope	0.04			Slope	0.04
Rossmoyne	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04

Table 19.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Trench sanitary landfill: Value	Area sanitary landfill: Rating class and limiting features	Area sanitary landfill: Value	Daily cover for landfill: Rating class and limiting features	Daily cover for landfill: Value
KnA, KoA:						
Kokomo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Hard to compact	1.00
	Too clayey	0.50			Ponding	1.00
					Too clayey	0.50
LbA, LbB:						
Libre	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.09
LbC2:						
Libre	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.09
	Slope	0.04	Slope	0.04	Slope	0.04
LoC2:						
Loudon	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Slope	0.04	Hard to compact	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	0.86
	Slope	0.04			Slope	0.04
LuA:						
Lumberton	Very limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	1.00	Depth to bedrock	0.14	Too clayey	0.50
	Too clayey	0.50			Depth to bedrock	0.14
LuB:						
Lumberton	Very limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	1.00	Depth to bedrock	0.84	Depth to bedrock	0.84
	Too clayey	0.50			Too clayey	0.50
LuC2:						
Lumberton	Very limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	1.00	Depth to bedrock	0.99	Depth to bedrock	0.99
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04
LuD2:						
Lumberton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to bedrock	0.14	Too clayey	0.50
	Too clayey	0.50			Depth to bedrock	0.14
LuF2:						
Lumberton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
MhB2:						
Miamian	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	0.44	Too clayey	1.00
	Depth to saturated zone	0.44			Depth to saturated zone	0.09

Table 19.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
MhC2:						
Miamian	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	0.44	Too clayey	1.00
	Depth to saturated zone	0.44	Slope	0.04	Depth to saturated zone	0.09
	Slope	0.04			Slope	0.04
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50	Depth to saturated zone	0.44	Too clayey	0.50
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
MnE2, MnF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50	Depth to saturated zone	0.44	Too clayey	0.50
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
Thrifton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
MoE2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	1.00	Depth to saturated zone	0.44	Too clayey	1.00
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
Crouse	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
MoF2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50	Depth to saturated zone	0.44	Too clayey	0.50
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
Crouse	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
MvD2:						
Morrisville	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Slippage	1.00	Hard to compact	1.00
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.68	Depth to bedrock	0.84	Depth to bedrock	0.84
	Too clayey	0.50	Depth to saturated zone	0.68	Too clayey	0.50
					Depth to saturated zone	0.24

Table 19.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
MvE2:						
Morrisville	Very limited		Very limited		Very limited	
	Slope	1.00	Slippage	1.00	Slope	1.00
	Depth to bedrock	1.00	Slope	1.00	Too clayey	1.00
	Too clayey	1.00	Depth to saturated zone	0.68	Hard to compact	1.00
	Depth to saturated zone	0.68	Depth to bedrock	0.14	Depth to saturated zone	0.24
					Depth to bedrock	0.14
NhC2:						
Nicely	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04
OcA:						
Ockley	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50			Gravel content	0.06
OcB:						
Ockley	Very limited		Not limited		Somewhat limited	
	Seepage	1.00			Too clayey	0.50
	Too clayey	0.50				
OdA:						
Ockley	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
OdB:						
Ockley	Somewhat limited		Very limited		Somewhat limited	
	Too clayey	0.50	Seepage	1.00	Too clayey	0.50
OdC2:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04
OeA:						
Odell	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
Pg:						
Pits, gravel	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Hard to compact	1.00
					Too clayey	0.50

Table 19.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
ReA, ReB:						
Reesville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
RnA, RoA:						
Ross	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00	Seepage	1.00		
RsA:						
Rossburg	Very limited		Very limited		Not limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00	Flooding	0.40		
	Flooding	0.40				
RuB2:						
Russell	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.24
SaA, SaB:						
Sardinia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.68
ScA, SeA:						
Secondcreek	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Hard to compact	1.00
					Ponding	1.00
ShA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
SmA:						
Sligo	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.09
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00				

Table 19.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00		
SrA:						
Stringley	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Gravel content	0.01
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00	Seepage	1.00		
Sligo	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.09
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00				
TaA:						
Taggart	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
TpA, TrA:						
Treaty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too clayey	0.50			Too clayey	0.50
Ud:						
Udorthents	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaC3:						
Wapahani	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Depth to saturated zone	0.44	Too clayey	0.50
	Depth to saturated zone	0.44	Slope	0.04	Depth to saturated zone	0.09
	Slope	0.04			Slope	0.04
WaD3:						
Wapahani	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50

Table 19.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
WaD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50	Depth to saturated zone	0.44	Too clayey	0.50
	Depth to saturated zone	0.44			Depth to saturated zone	0.09
WcA, WcB:						
Westboro	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
Schaffer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
WmA, WmB:						
Williamsburg	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
XaA, XaB, XaB2:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.24

Table 20.—Agricultural Waste Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
BhA:						
Birkbeck	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.53	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
BhB:						
Birkbeck	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.53	Depth to saturated zone	0.53	Depth to saturated zone	0.53
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
BmA:						
Blanchester	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too acid	0.22	Too acid	0.77	Too acid	0.77
CaD2:						
Casco	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Shallow to discontinuity	0.95	Shallow to discontinuity	0.95	Too steep for sprinkler application	1.00
	Droughty	0.29	Droughty	0.29	Droughty	0.29
CaE2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Filtering capacity	1.00	Slope	1.00	Too steep for surface application	1.00
	Shallow to discontinuity	0.99	Shallow to discontinuity	0.99	Too steep for sprinkler application	1.00
	Droughty	0.45	Droughty	0.45	Droughty	0.45

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CbB:						
Celina---------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Shallow to densic materials	0.64	Shallow to densic materials	0.64	Restricted permeability	0.31
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	0.08
	Droughty	0.05	Droughty	0.05	Droughty	0.05
CbB2:						
Celina---------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Shallow to densic materials	0.84	Shallow to densic materials	0.84	Restricted permeability	0.31
	Restricted permeability	0.41	Restricted permeability	0.31	Droughty	0.29
	Droughty	0.29	Droughty	0.29	Too steep for surface application	0.08
CcA:						
Celina---------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Shallow to densic materials	0.06	Shallow to densic materials	0.06		
Crosby---------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Shallow to densic materials	0.29	Shallow to densic materials	0.29	Droughty	0.22
	Droughty	0.22	Droughty	0.22	Too acid	0.07
	Too acid	0.02	Too acid	0.07		
CeB:						
Celina---------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Shallow to densic materials	0.64	Shallow to densic materials	0.64	Restricted permeability	0.31
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	0.08
	Droughty	0.04	Droughty	0.04	Droughty	0.04
Losantville----	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Dense layer	1.00	Shallow to densic materials	1.00	Droughty	1.00
	Shallow to densic materials	1.00	Droughty	1.00	Restricted permeability	0.31
	Droughty	1.00	Restricted permeability	0.31	Too steep for surface application	0.08
	Restricted permeability	0.41				

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
CeB2:						
Celina----------	Very limited		Somewhat limited		Somewhat limited	
	Dense layer	1.00	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Depth to saturated zone	0.95	Shallow to densic materials	0.95	Droughty	0.50
	Shallow to densic material	0.95	Droughty	0.50	Restricted permeability	0.31
	Droughty	0.50	Restricted permeability	0.31	Too steep for surface application	0.08
	Restricted permeability	0.41				
Losantville-----	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Dense layer	1.00	Shallow to densic materials	1.00	Droughty	1.00
	Shallow to densic materials	1.00	Droughty	1.00	Restricted permeability	0.31
	Droughty	1.00	Restricted permeability	0.31	Too steep for surface application	0.08
	Restricted permeability	0.41				
CmA:						
Clermont--------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too acid	0.50	Too acid	1.00	Too acid	1.00
	Runoff limitation	0.40				
CpA:						
Coblen----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Flooding	0.40	Flooding	0.40		
CrB:						
Corwin----------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Droughty	0.10	Droughty	0.10	Droughty	0.10
	Shallow to densic materials	0.06	Too acid	0.07	Too steep for surface application	0.08
	Too acid	0.02	Shallow to densic materials	0.06	Too acid	0.07
CtA:						
Crosby----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.16	Droughty	0.16	Droughty	0.16
	Shallow to densic materials	0.15	Shallow to densic materials	0.15	Too acid	0.07
	Too acid	0.02	Too acid	0.07		

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
CtA:						
Celina----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Shallow to densic materials	0.90	Shallow to densic materials	0.90	Droughty	0.32
	Restricted permeability	0.41	Droughty	0.32	Restricted permeability	0.31
	Droughty	0.32	Restricted permeability	0.31		
CtB:						
Crosby----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.17	Droughty	0.17	Droughty	0.17
	Shallow to densic materials	0.10	Shallow to densic materials	0.10	Too acid	0.07
	Too acid	0.02	Too acid	0.07		
Celina----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Shallow to densic materials	0.79	Shallow to densic materials	0.79	Restricted permeability	0.31
	Restricted permeability	0.41	Restricted permeability	0.31	Droughty	0.19
	Droughty	0.19	Droughty	0.19		
CuC2:						
Crouse----------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Too steep for surface application	1.00
	Depth to saturated zone	0.01	Depth to saturated zone	0.01	Too steep for sprinkler application	0.22
					Depth to saturated zone	0.01
Miamian---------	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Too steep for surface application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Depth to saturated zone	0.43
	Slope	0.04	Slope	0.04	Restricted permeability	0.31
					Too steep for sprinkler application	0.22

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
CuD2:						
Crouse	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Depth to saturated zone	0.01	Depth to saturated zone	0.01	Too steep for sprinkler application	1.00
					Depth to saturated zone	0.01
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Depth to saturated zone	0.43
	Shallow to densic materials	0.06	Shallow to densic materials	0.06	Restricted permeability	0.31
	Droughty	0.01	Droughty	0.01	Droughty	0.01
DhA, DuA:						
Dunham	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
EgB:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to discontinuity	0.46	Shallow to discontinuity	0.46	Droughty	0.10
	Droughty	0.10	Droughty	0.10	Too steep for surface application	0.08
EkC2:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Dense layer	1.00	Shallow to discontinuity	0.97	Too steep for surface application	1.00
	Shallow to discontinuity	0.97	Droughty	0.86	Droughty	0.86
	Droughty	0.86	Slope	0.04	Too steep for sprinkler application	0.22
	Slope	0.04				
FgA, FgB:						
Fincastle	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FnA:						
Fox------------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to discontinuity	0.29	Shallow to discontinuity	0.29	Too acid	0.07
	Too acid	0.02	Too acid	0.07		
FnB:						
Fox------------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to discontinuity	0.10	Shallow to discontinuity	0.10	Too steep for surface application	0.08
	Too acid	0.02	Too acid	0.07	Too acid	0.07
FnC2:						
Fox------------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to discontinuity	0.54	Shallow to discontinuity	0.54	Too steep for surface application	1.00
	Slope	0.04	Too acid	0.07		
	Too acid	0.02	Slope	0.04	Too steep for sprinkler application	0.22
					Too acid	0.07
HkD2, HkE2, HkF2:						
Hickory-------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Too acid	0.08	Too acid	0.31		
					Too steep for sprinkler application	1.00
					Too acid	0.31
HnE2:						
Hickory--------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Too acid	0.08	Too acid	0.31		
					Too steep for sprinkler application	1.00
					Too acid	0.31

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
HnE2:						
Morrisville----	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Too steep for sprinkler application	1.00
	Droughty	0.51	Droughty	0.51	Restricted permeability	0.60
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Droughty	0.51
					Depth to saturated zone	0.43
JrA:						
Jonesboro------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Rossmoyne------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Too acid	0.08	Too acid	0.31	Too acid	0.31
JrB:						
Jonesboro------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Too steep for surface application	0.08
Rossmoyne------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Too acid	0.08	Too acid	0.31	Too acid	0.31
					Too steep for surface application	0.08

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
JrC2:						
Jonesboro	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too steep for surface application	1.00
	Slope	0.04	Slope	0.04	Depth to saturated zone	1.00
					Too steep for sprinkler application	0.22
Rossmoyne	Very limited		Very limited		Very limited	
	Dense layer	1.00	Depth to saturated zone	1.00	Too steep for surface application	1.00
	Depth to saturated zone	1.00	Restricted permeability	0.60	Depth to saturated zone	1.00
	Restricted permeability	0.74	Too acid	0.31	Restricted permeability	0.60
	Too acid	0.08	Slope	0.04	Too acid	0.31
	Slope	0.04			Too steep for sprinkler application	0.22
KnA, KoA:						
Kokomo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
LbA:						
Libre	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.43	Too acid	0.77	Too acid	0.77
	Too acid	0.22	Depth to saturated zone	0.43	Depth to saturated zone	0.43
	Shallow to densic materials	0.15	Shallow to densic materials	0.15		
LbB:						
Libre	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.43	Too acid	0.77	Too acid	0.77
	Too acid	0.22	Depth to saturated zone	0.43	Depth to saturated zone	0.43
	Shallow to densic materials	0.20	Shallow to densic materials	0.20	Too steep for surface application	0.08

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
LbC2:						
Libre----------	Somewhat limited		Somewhat limited		Very limited	
	Shallow to densic materials	0.46	Too acid	0.77	Too steep for surface application	1.00
	Depth to saturated zone	0.43	Shallow to densic materials	0.46	Too acid	0.77
	Too acid	0.22	Depth to saturated zone	0.43	Depth to saturated zone	0.43
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
LoC2:						
Loudon---------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too steep for surface application	1.00
	Too acid	0.18	Too acid	0.67	Depth to saturated zone	1.00
	Slope	0.04	Slope	0.04	Too acid	0.67
					Too steep for sprinkler application	0.22
LuA:						
Lumberton------	Not limited		Not limited		Not limited	
LuB:						
Lumberton------	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08
LuC2:						
Lumberton------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Too steep for surface application	1.00
	Droughty	0.01	Droughty	0.01	Too steep for sprinkler application	0.22
					Droughty	0.01
LuD2:						
Lumberton------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LuF2:						
Lumberton------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	0.16	Depth to bedrock	0.16	Too steep for sprinkler application	1.00
	Droughty	0.03	Droughty	0.03	Depth to bedrock	0.16
					Droughty	0.03
MhB2:						
Miamian--------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shallow to densic materials	0.90	Shallow to densic materials	0.90	Droughty	0.57
	Droughty	0.57	Droughty	0.57	Depth to saturated zone	0.43
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Restricted permeability	0.31
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	0.08
MhC2:						
Miamian--------	Somewhat limited		Somewhat limited		Very limited	
	Shallow to densic materials	0.71	Shallow to densic materials	0.71	Too steep for surface application	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
	Restricted permeability	0.41	Droughty	0.37	Droughty	0.37
	Droughty	0.37	Restricted permeability	0.31	Restricted permeability	0.31
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
MhD2:						
Miamian--------	Very limited		Very limited		Very limited	
	Dense layer	1.00	Slope	1.00	Too steep for surface application	1.00
	Slope	1.00	Shallow to densic materials	0.97	Too steep for sprinkler application	1.00
	Shallow to densic materials	0.97	Droughty	0.86	Droughty	0.86
	Droughty	0.86	Depth to saturated zone	0.43	Depth to saturated zone	0.43
	Depth to saturated zone	0.43	Restricted permeability	0.31	Restricted permeability	0.31

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
MnE2, MnF2:						
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Depth to saturated zone	0.43
	Shallow to densic materials	0.01	Shallow to densic materials	0.01	Restricted permeability	0.31
Thrifton-------	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00	Too steep for surface application	1.00
	Dense layer	1.00	Shallow to densic materials	1.00	Too steep for sprinkler application	1.00
	Shallow to densic materials	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Restricted permeability	0.31	Restricted permeability	0.31
MoE2:						
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Restricted permability	0.31	Depth to saturated zone	0.43
	Shallow to densic materials	0.20	Shallow to densic materials	0.20	Restricted permeability	0.31
	Droughty	0.01	Droughty	0.01	Droughty	0.01
Crouse---------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
MoF2:						
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Shallow to densic materials	0.54	Shallow to densic materials	0.54	Too steep for sprinkler application	1.00
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Droughty	0.20	Droughty	0.20	Droughty	0.20

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
MoF2:						
Crouse----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
MvD2:						
Morrisville----	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	0.74	Depth to saturated zone	0.68	Too steep for sprinkler application	1.00
	Depth to saturated zone	0.68	Restricted permeability	0.60	Depth to saturated zone	0.68
	Droughty	0.58	Droughty	0.58	Restricted permeability	0.60
					Droughty	0.58
MvE2:						
Morrisville----	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	0.74	Depth to saturated zone	0.68	Too steep for sprinkler application	1.00
	Depth to saturated zone	0.68	Restricted permeability	0.60	Depth to saturated zone	0.68
	Droughty	0.24	Droughty	0.24	Restricted permeability	0.60
					Droughty	0.24
NhC2:						
Nicely----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too steep for surface application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Depth to saturated zone	1.00
	Slope	0.04	Too acid	0.07	Restricted permeability	0.31
	Too acid	0.02	Slope	0.04	Too steep for sprinkler application	0.22
					Too acid	0.07
OcA:						
Ockley----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OcB:						
Ockley---------	Somewhat limited		Somewhat limited		Somewhat limited	
	Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
					Filtering capacity	0.01
OdA:						
Ockley---------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.01	Too acid	0.01	Too acid	0.01
OdB:						
Ockley---------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.01	Too acid	0.01	Too steep for surface application	0.08
					Too acid	0.01
OdC2:						
Ockley---------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Slope	0.04	Slope	0.04	Too steep for surface application	1.00
	Too acid	0.01	Too acid	0.01	Too steep for sprinkler application	0.22
					Too acid	0.01
OeA:						
Odell----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Pg:						
Pits, gravel---	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry---	Not rated		Not rated		Not rated	
RcA:						
Randolph-------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.03	Too acid	0.07	Too acid	0.07
	Too acid	0.02	Depth to bedrock	0.03	Depth to bedrock	0.03

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ReA, ReB:						
Reesville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.01	Too acid	0.01	Too acid	0.01
RnA:						
Ross	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Flooding	0.60
RoA:						
Ross	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
RsA:						
Rossburg	Somewhat limited		Somewhat limited		Somewhat limited	
	Flooding	0.40	Flooding	0.40	Filtering capacity	0.01
	Filtering capacity	0.01	Filtering capacity	0.01		
RuB2:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
					Too steep for surface application	0.08
SaA:						
Sardinia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
SaB:						
Sardinia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
					Too steep for surface application	0.08

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
ScA, SeA:						
Secondcreek	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Runoff limitation	0.40	Too acid	0.01	Too acid	0.01
	Too acid	0.01				
ShA:						
Shoals	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
SmA:						
Sligo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Flooding	0.60
	Leaching limitation	0.70				
SrA:						
Stringley	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
Sligo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
TaA:						
Taggart	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
TpA, TrA:						
Treaty	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ud:						
Udorthents	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
WaC3:						
Wapahani	Very limited Depth to saturated zone Dense layer Shallow to densic materials Droughty Restricted permeability	 1.00 1.00 1.00 1.00 0.41	Very limited Depth to saturated zone Shallow to densic materials Droughty Restricted permeability Slope	 1.00 1.00 1.00 0.31 0.04	Very limited Depth to saturated zone Droughty Too steep for surface application Restricted permeability Too steep for sprinkler application	 1.00 1.00 1.00 0.31 0.22
Miamian	Somewhat limited Shallow to densic materials Droughty Depth to saturated zone Restricted permeability Too acid	 0.64 0.50 0.43 0.41 0.08	Somewhat limited Shallow to densic materials Droughty Depth to saturated zone Too acid Restricted permeability	 0.64 0.50 0.43 0.31 0.31	Very limited Too steep for surface application Droughty Depth to saturated zone Too acid Restricted permeability	 1.00 0.50 0.43 0.31 0.31
WaD3:						
Wapahani	Very limited Depth to saturated zone Dense layer Shallow to densic materials Droughty Slope	 1.00 1.00 1.00 1.00 1.00	Very limited Depth to saturated zone Shallow to densic materials Droughty Slope Restricted permeability	 1.00 1.00 1.00 1.00 0.31	Very limited Depth to saturated zone Too steep for surface application Droughty Too steep for sprinkler application Restricted permeability	 1.00 1.00 1.00 1.00 0.31
Miamian	Very limited Slope Shallow to densic materials Droughty Depth to saturated zone Restricted permeability	 1.00 0.90 0.87 0.43 0.41	Very limited Slope Shallow to densic materials Droughty Depth to saturated zone Too acid	 1.00 0.90 0.87 0.43 0.31	Very limited Too steep for surface application Too steep for sprinkler application Droughty Depth to saturated zone Too acid	 1.00 1.00 0.87 0.43 0.31

Table 20.—Agricultural Waste Management—Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WcA, WcB:						
Westboro	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Runoff limitation	0.40				
Schaffer	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
WmA:						
Williamsburg	Somewhat limited		Somewhat limited		Somewhat limited	
	Too acid	0.22	Too acid	0.77	Too acid	0.77
WmB:						
Williamsburg	Somewhat limited		Somewhat limited		Somewhat limited	
	Too acid	0.22	Too acid	0.77	Too acid	0.77
					Too steep for surface application	0.08
XaA:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
XaB, XaB2:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
					Too steep for surface application	0.08

Table 21.—Water Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BhA, BhB:						
Birkbeck-------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	0.53	Slow refill	0.28
			Piping	0.50	Depth to water	0.21
					Cutbanks cave	0.10
BmA:						
Blanchester----	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.96
			Ponding	0.50	Cutbanks cave	0.10
			Piping	0.50		0.10
CaD2:						
Casco----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.03				
CaE2:						
Casco----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.68				
CbB, CbB2:						
Celina---------	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
CcA:						
Celina---------	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
Crosby---------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
CeB, CeB2:						
Celina---------	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
Losantville----	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		

Table 21.—Water Management, Part I—Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Pond reservoir areas: Value	Embankments, dikes, and levees: Rating class and limiting features	Embankments, dikes, and levees: Value	Aquifer-fed excavated ponds: Rating class and limiting features	Aquifer-fed excavated ponds: Value
CmA:						
Clermont	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.96
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
CpA:						
Coblen	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.02
			Depth to saturated zone	0.95		
CrB:						
Corwin	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
CtA, CtB:						
Crosby	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Celina	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
CuC2:						
Crouse	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
			Depth to saturated zone	0.01		
Miamian	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
			Depth to saturated zone	0.43		
CuD2:						
Crouse	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
	Slope	0.03	Depth to saturated zone	0.01		
Miamian	Somewhat limited		Very limited		Very limited	
	Slope	0.03	Piping	1.00	Depth to water	1.00
			Depth to saturated zone	0.43		
DhA, DuA:						
Dunham	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Seepage	1.00		

Table 21.—Water Management, Part I—Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
EgB, EkC2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
FgA, FgB:						
Fincastle	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
FnA:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FnB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
FnC2:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
HkD2:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
	Slope	0.03				
HkE2:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
	Slope	0.18				
HkF2:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.50	Piping	0.50	Depth to water	1.00
	Seepage	0.50				
HnE2:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
	Slope	0.18				
Morrisville	Very limited		Very limited		Very limited	
	Slippage	1.00	Hard to compact	1.00	Depth to water	1.00
	Depth to bedrock	0.19	Depth to saturated zone	0.43		
	Slope	0.18				
JrA:						
Jonesboro	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Rossmoyne	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		

Table 21.—Water Management, Part I—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
JrB:						
Jonesboro------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Rossmoyne------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
JrC2:						
Jonesboro------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Rossmoyne------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
KnA:						
Kokomo---------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
KoA:						
Kokomo---------	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
LbA, LbB, LbC2:						
Libre----------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
			Depth to saturated zone	0.43		
LoC2:						
Loudon---------	Not limited		Very limited		Very limited	
			Hard to compact	1.00	Depth to water	1.00
			Depth to saturated zone	1.00		
LuA:						
Lumberton------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
	Depth to bedrock	0.03				
LuB:						
Lumberton------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
	Depth to bedrock	0.26				

Table 21.—Water Management, Part I—Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
LuC2:						
Lumberton------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
	Depth to bedrock	0.42	Thin layer	0.47		
LuD2:						
Lumberton------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
	Depth to bedrock	0.03				
	Slope	0.03				
LuF2:						
Lumberton------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.82	Piping	0.50	Depth to water	1.00
	Depth to bedrock	0.74				
	Seepage	0.50				
MhB2, MhC2:						
Miamian--------	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
			Depth to saturated zone	0.43		
MhD2:						
Miamian--------	Somewhat limited		Very limited		Very limited	
	Slope	0.03	Piping	1.00	Depth to water	1.00
			Depth to saturated zone	0.43		
MnE2:						
Miamian--------	Somewhat limited		Very limited		Very limited	
	Slope	0.18	Piping	1.00	Depth to water	1.00
			Depth to saturated zone	0.43		
Thrifton-------	Somewhat limited		Very limited		Very limited	
	Slope	0.18	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	1.00		
MnF2:						
Miamian--------	Somewhat limited		Very limited		Very limited	
	Slope	0.82	Piping	1.00	Depth to water	1.00
			Depth to saturated zone	0.43		
Thrifton-------	Somewhat limited		Very limited		Very limited	
	Slope	0.82	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	1.00		
MoE2:						
Miamian--------	Somewhat limited		Very limited		Very limited	
	Slope	0.18	Piping	1.00	Depth to water	1.00
			Depth to saturated zone	0.43		
Crouse---------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
	Slope	0.18				

Table 21.—Water Management, Part I—Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MoF2:						
Miamian	Somewhat limited		Very limited		Very limited	
	Slope	0.82	Piping	1.00	Depth to water	1.00
			Depth to saturated zone	0.43		
Crouse	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.82	Piping	0.50	Depth to water	1.00
	Seepage	0.50				
MvD2:						
Morrisville	Very limited		Very limited		Very limited	
	Slippage	1.00	Hard to compact	1.00	Depth to water	1.00
	Depth to bedrock	0.26	Depth to saturated zone	0.68		
	Slope	0.03				
MvE2:						
Morrisville	Very limited		Very limited		Very limited	
	Slippage	1.00	Hard to compact	1.00	Depth to water	1.00
	Slope	0.18	Depth to saturated zone	0.68		
	Depth to bedrock	0.03				
NhC2:						
Nicely	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
OcA:						
Ockley	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Depth to water	1.00
OcB:						
Ockley	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
OdA:						
Ockley	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.07	Depth to water	1.00
OdB:						
Ockley	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
OdC2:						
Ockley	Very limited		Not limited		Very limited	
	Seepage	1.00			Depth to water	1.00
OeA:						
Odell	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.50		
Pg:						
Pits, gravel	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry	Not rated		Not rated		Not rated	

Table 21.—Water Management, Part I—Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Pond reservoir areas: Value	Embankments, dikes, and levees: Rating class and limiting features	Embankments, dikes, and levees: Value	Aquifer-fed excavated ponds: Rating class and limiting features	Aquifer-fed excavated ponds: Value
RcA:						
Randolph-------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.61	Depth to saturated zone	1.00	Depth to water	1.00
			Hard to compact	1.00		
ReA, ReB:						
Reesville------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
RnA, RoA:						
Ross-----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
RsA:						
Rossburg-------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.99
RuB2:						
Russell--------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
Xenia----------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Depth to saturated zone	0.68	Depth to water	1.00
			Piping	0.50		
SaA, SaB:						
Sardinia-------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Depth to saturated zone	0.95	Depth to water	1.00
			Piping	0.50		
ScA:						
Secondcreek----	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
			Thin layer	0.07		
SeA:						
Secondcreek----	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.96
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
			Thin layer	0.07		
ShA:						
Shoals---------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Cutbanks cave	1.00
					Slow refill	0.28
			Piping	1.00		

Table 21.—Water Management, Part I—Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
SmA:						
Sligo----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Cutbanks cave	1.00
			Depth to saturated zone	0.43	Depth to water	0.25
SnA:						
Sloan----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Cutbanks cave	1.00
					Slow refill	0.28
			Piping	0.50		
SrA:						
Stringley------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.99
Sligo----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Cutbanks cave	1.00
			Depth to saturated zone	0.43	Depth to water	0.25
TaA:						
Taggart--------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.50		
TpA, TrA:						
Treaty---------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
Ud:						
Udorthents-----	Not rated		Not rated		Not rated	
W:						
Water----------	Not rated		Not rated		Not rated	
WaC3:						
Wapahani-------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Miamian--------	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
			Depth to saturated zone	0.43		
WaD3:						
Wapahani-------	Somewhat limited		Very limited		Very limited	
	Slope	0.03	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		

Table 21.—Water Management, Part I—Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
WaD3:						
Miamian---------	Somewhat limited		Very limited		Very limited	
	Slope	0.03	Piping	1.00	Depth to water	1.00
			Depth to saturated zone	0.43		
WcA, WcB:						
Westboro--------	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
Schaffer--------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.50		
WmA, WmB:						
Williamsburg----	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Piping	0.50	Depth to water	1.00
XaA, XaB, XaB2:						
Xenia-----------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.50	Depth to saturated zone	0.68	Depth to water	1.00
			Piping	0.50		

Table 21.—Water Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Constructing grassed waterways		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BhA:						
Birkbeck-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.14	Depth to saturated zone	1.00		
BhB:						
Birkbeck-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.14	Depth to saturated zone	1.00	Slope	0.04
BmA:						
Blanchester----	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Restricted permeability	0.91	Ponding	0.50
			Ponding	0.50		
CaD2:						
Casco----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Content of large stones	0.58	Too sandy	1.00	Cutbanks cave	1.00
			Content of large stones	0.58	Depth to saturated zone	1.00
					Large stones	0.08
CaE2:						
Casco----------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00	Too sandy	1.00	Cutbanks cave	1.00
	Content of large stones	0.68	Content of large stones	0.68	Depth to saturated zone	1.00
					Large stones	0.08
CbB, CbB2:						
Celina---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
CcA:						
Celina---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		

Table 21.—Water Management, Part II—Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
CcA:						
Crosby	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Restricted permeability	0.91		
CeB, CeB2:						
Celina	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
Losantville	Very limited		Very limited		Slightly limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.22
	Droughty	1.00	Depth to saturated zone	1.00	Slope	0.04
	Depth to saturated zone	1.00	Restricted permeability	0.22		
	Restricted permeability	0.22				
CmA:						
Clermont	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.99	Ponding	1.00	Restricted permeability	0.99
			Restricted permeability	0.99		
CpA:						
Coblen	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Frost action	1.00
CrB:						
Corwin	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Depth to saturated zone	1.00	Slope	0.04
	Depth to saturated zone	0.86	Restricted permeability	0.91		
CtA, CtB:						
Crosby	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.91
	Restricted permeability	0.91	Restricted permeability	0.91		
Celina	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		

Table 21.—Water Management, Part II—Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
CuC2:						
Crouse---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Slope	1.00	Slope	1.00	Depth to saturated zone	1.00
					Slope	0.96
Miamian--------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
	Depth to saturated zone	0.09				
CuD2:						
Crouse---------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Slope	1.00	Slope	1.00
					Depth to saturated zone	1.00
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
	Depth to saturated zone	0.09				
DhA:						
Dunham---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Ponding	1.00		
DuA:						
Dunham---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Ponding	1.00		
			Too sandy	1.00		
EgB:						
Eldean---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
			Too sandy	1.00	Depth to saturated zone	1.00
					Slope	0.04
EkC2:						
Eldean---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
	Droughty	1.00	Too sandy	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Content of large stones	0.01	Content of large stones	0.01		

Table 21.—Water Management, Part II—Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
FgA, FgB:						
Fincastle	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
FnA:						
Fox	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
			Too sandy	1.00	Depth to saturated zone	1.00
FnB:						
Fox	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
			Too sandy	1.00	Slope	0.04
FnC2:						
Fox	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	1.00
	Slope	1.00	Too sandy	1.00	Depth to saturated zone	1.00
			Slope	1.00	Slope	0.96
HkD2, HkE2, HkF2:						
Hickory	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
HnE2:						
Hickory	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
Morrisville	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Content of large stones	0.97	Large stones	0.49
	Content of large stones	0.97	Depth to bedrock	0.71	Restricted permeability	0.40
	Depth to bedrock	0.71	Restricted permeability	0.40		
JrA:						
Jonesboro	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Restricted permeability	0.91	Depth to saturated zone	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.86	Restricted permeability	0.91		
Rossmoyne	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Rooting depth	1.00	Depth to saturated zone	1.00		
	Depth to saturated zone	0.86	Rooting depth	1.00		

Table 21.—Water Management, Part II—Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
JrB:						
Jonesboro------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Restricted permeability	0.91	Depth to saturated zone	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.86	Restricted permeability	0.91	Slope	0.04
Rossmoyne------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Rooting depth	1.00	Depth to saturated zone	1.00	Slope	0.04
	Depth to saturated zone	0.86	Rooting depth	1.00		
JrC2:						
Jonesboro------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Slope	1.00	Depth to saturated zone	1.00	Slope	0.96
	Restricted permeability	0.91	Slope	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.86	Restricted permeability	0.91		
Rossmoyne------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Rooting depth	1.00	Depth to saturated zone	1.00	Slope	0.96
	Slope	1.00	Rooting depth	1.00		
	Depth to saturated zone	0.86	Slope	1.00		
KnA, KoA:						
Kokomo---------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.22	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.22	Restricted permeability	0.22
LbA:						
Libre----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.09			Depth to saturated zone	1.00
LbB:						
Libre----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.09			Depth to saturated zone	1.00
					Slope	0.04
LbC2:						
Libre----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Slope	1.00	Slope	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	0.09			Slope	0.96

Table 21.—Water Management, Part II—Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
LoC2:						
Loudon---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Slope	1.00	Depth to	1.00	Slope	0.96
	Restricted	0.91	saturated zone		Restricted	0.91
	permeability		Slope	1.00	permeability	
	Depth to	0.86	Restricted	0.91		
	saturated zone		permeability			
LuA:						
Lumberton------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	0.13	Depth to bedrock	0.13	Depth to	1.00
					saturated zone	
LuB:						
Lumberton------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	0.84	Depth to bedrock	0.84	Depth to	1.00
					saturated zone	
					Slope	0.04
LuC2:						
Lumberton------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Slope	1.00	Slope	1.00	Depth to	1.00
	Depth to bedrock	0.99	Depth to bedrock	0.99	saturated zone	
					Slope	0.96
LuD2:						
Lumberton------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	0.13	Depth to bedrock	0.13	Depth to	1.00
					saturated zone	
LuF2:						
Lumberton------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Slope	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to	1.00
					saturated zone	
					Depth to rock	0.04
MhB2:						
Miamian--------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to	1.00
	Restricted	0.22	Restricted	0.22	saturated zone	
	permeability		permeability		Restricted	0.22
	Depth to	0.09			permeability	
	saturated zone				Slope	0.04
MhC2:						
Miamian--------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to	1.00
	Slope	1.00	Slope	1.00	saturated zone	
	Restricted	0.22	Restricted	0.22	Slope	0.96
	permeability		permeability		Restricted	0.22
	Depth to	0.09			permeability	
	saturated zone					

Table 21.—Water Management, Part II—Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
MhD2:						
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Restricted permeability	0.22	Restricted permeability	0.22
	Restricted permeability	0.22				
	Depth to saturated zone	0.09				
MnE2, MnF2:						
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
	Depth to saturated zone	0.09				
Thrifton-------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Restricted permeability	0.22		
	Restricted permeability	0.22				
MoE2, MoF2:						
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
	Depth to saturated zone	0.09				
Crouse---------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Slope	1.00	Slope	1.00
					Depth to saturated zone	1.00
MvD2:						
Morrisville----	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Large stones	0.49
	Droughty	1.00	Depth to saturated zone	1.00	Restricted permeability	0.40
	Content of large stones	1.00	Content of large stones	1.00		
	Depth to bedrock	0.84	Depth to bedrock	0.84		
MvE2:						
Morrisville----	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Large stones	0.49
	Content of large stones	1.00	Depth to saturated zone	1.00	Restricted permeability	0.40
	Droughty	1.00	Content of large stones	1.00		
	Restricted permeability	0.40	Restricted permeability	0.40		

Table 21.—Water Management, Part II—Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
NhC2:						
Nicely---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.96
	Slope	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	0.86	Slope	1.00		
	Restricted permeability	0.22	Restricted permeability	0.22		
OcA:						
Ockley---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
OcB:						
Ockley---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
					Slope	0.04
OdA:						
Ockley---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
OdB:						
Ockley---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
					Slope	0.04
OdC2:						
Ockley---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
OeA:						
Odell----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
Pg:						
Pits, gravel---	Not rated		Not rated		Not rated	
Pk:						
Pits, quarry---	Not rated		Not rated		Not rated	
RcA:						
Randolph-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to rock	0.01
	Restricted permeability	0.22	Restricted permeability	0.22		

Table 21.—Water Management, Part II—Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
ReA, ReB:						
Reesville------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
RnA, RoA:						
Ross-----------	Not limited		Not limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
RsA:						
Rossburg-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
RuB2:						
Russell--------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
					Depth to saturated zone	1.00
					Slope	0.04
Xenia----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.24	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
SaA:						
Sardinia-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
SaB:						
Sardinia-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
ScA, SeA:						
Secondcreek----	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.91	Ponding	1.00	Restricted permeability	0.91
			Restricted permeability	0.91		
ShA:						
Shoals---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00

Table 21.—Water Management, Part II—Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
SmA:						
Sligo----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	1.00
	Depth to saturated zone	0.09			Depth to saturated zone	1.00
SnA:						
Sloan----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
SrA:						
Stringley------	Not limited		Not limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
Sligo----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	1.00
	Depth to saturated zone	0.09			Depth to saturated zone	1.00
TaA:						
Taggart--------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
TpA, TrA:						
Treaty---------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
			Ponding	1.00		
Ud:						
Udorthents-----	Not rated		Not rated		Not rated	
W:						
Water----------	Not rated		Not rated		Not rated	
WaC3:						
Wapahani-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.96
	Droughty	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Slope	1.00	Slope	1.00		
	Depth to saturated zone	1.00	Restricted permeability	0.22		
	Restricted permeability	0.22				
Miamian--------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
	Depth to saturated zone	0.09				

Table 21.—Water Management, Part II—Continued

Map symbol and soil name	Constructing grassed waterways: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
WaD3:						
Wapahani-------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Restricted permeability	0.22
	Droughty	1.00	Depth to saturated zone	1.00		
	Depth to saturated zone	1.00	Restricted permeability	0.22		
	Restricted permeability	0.22				
Miamian--------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Restricted permeability	0.22	Restricted permeability	0.22
	Restricted permeability	0.22				
	Depth to saturated zone	0.09				
WcA, WcB:						
Westboro-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
Schaffer-------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.40
	Restricted permeability	0.40	Restricted permeability	0.40		
WmA:						
Williamsburg---	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
WmB:						
Williamsburg---	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
					Slope	0.04
XaA:						
Xenia----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.24	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
XaB, XaB2:						
Xenia----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.24	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04

Table 22.—Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
BhA:												
Birkbeck--------	0-10	Silt loam	ML	A-4, A-6, A-7	0	0	100	100	95-100	95-100	28-45	5-15
	10-13	Silt loam	CL, ML	A-4, A-6	0	0	100	100	100	95-100	30-40	7-15
	13-57	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	95-100	95-100	85-100	30-50	10-25
	57-67	Loam, silty clay loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0-1	0-5	95-100	85-100	70-100	55-85	25-40	5-20
	67-80	Loam, silt loam, silty clay loam, clay loam	CL, CL-ML	A-4, A-6	0-1	0-5	95-100	85-100	70-100	55-85	20-40	5-20
BhB:												
Birkbeck--------	0-10	Silt loam	ML	A-4, A-6, A-7	0	0	100	100	95-100	95-100	28-45	5-15
	10-52	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	95-100	95-100	85-100	30-50	10-25
	52-65	Loam, silty clay loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0-1	0-5	95-100	85-100	70-100	55-85	25-40	5-20
	65-80	Loam, silt loam, silty clay loam, clay loam	CL, CL-ML	A-4, A-6	0-1	0-5	95-100	85-100	70-100	55-85	20-40	5-20
BmA:												
Blanchester-----	0-9	Silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-95	25-40	6-20
	9-37	Silty clay loam, silt loam	CL, ML	A-4, A-6, A-7	0	0	100	100	90-100	75-90	30-45	8-18
	37-80	Clay loam, silty clay loam	CH, CL	A-6, A-7	0	0	95-100	85-95	80-95	70-95	35-60	15-30

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
CaD2:												
Casco-----------	0-6	Silt loam	CL, CL-ML, ML	A-4	0	0-9	80-100	75-100	65-95	50-80	20-30	3-10
	6-23	Clay loam, sandy clay loam, gravelly loam, gravelly clay loam	CL, GC, SC	A-2, A-6, A-7	0-1	0-9	55-100	50-100	40-90	20-80	25-46	11-26
	23-80	Stratified gravel to sand, extremely gravelly loamy coarse sand	GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-30	25-100	20-95	10-75	2-10	0-14	NP
CaE2:												
Casco-----------	0-5	Silt loam	CL, CL-ML, ML	A-4	0	0-9	80-100	75-100	65-95	50-80	20-30	3-10
	5-21	Clay loam, sandy clay loam, gravelly loam, gravelly clay loam	CL, GC, SC	A-2, A-6, A-7	0-1	0-9	55-100	50-100	40-90	20-80	25-46	11-26
	21-80	Stratified gravel to sand, gravelly loamy sand, extremely gravelly loamy coarse sand	GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-30	25-100	20-95	10-75	2-10	0-14	NP
CbB:												
Celina----------	0-10	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	10-28	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	28-80	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-95	75-90	65-90	50-80	20-36	4-16

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
CbB2:												
Celina----------	0-6	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	6-25	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	25-80	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-95	75-90	65-90	50-80	20-36	4-16
CcA:												
Celina----------	0-10	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	10-36	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	36-80	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-95	75-90	65-90	50-80	20-36	4-16
Crosby----------	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-85	15-40	NP-15
	10-28	Clay loam, silty clay loam, silty clay, clay	CH, CL	A-6, A-7-6	0-1	0-3	90-100	85-100	75-95	55-90	30-60	10-35
	28-32	Loam, fine sandy loam, clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	85-100	80-98	65-90	40-70	15-35	NP-20
	32-80	Loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	85-100	80-98	65-90	40-70	15-30	NP-15
CeB:												
Celina----------	0-12	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	12-28	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	28-80	Loam, silt loam, clay loam	CL, CL-ML	A-6, A-4	0	0	75-95	75-90	65-90	50-80	20-36	4-16
Losantville-----	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-2	90-100	85-100	80-95	50-85	15-40	NP-15
	8-18	Clay, clay loam	CH, CL	A-6, A-7, A-7-6	0	0-2	90-100	80-98	75-95	55-80	30-60	10-35
	18-80	Loam	CL, ML, SC, SM	A-4, A-6	0	0-5	100	80-95	75-90	45-70	15-30	NP-15

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
CeB2:												
Celina----------	0-8	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	8-23	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	23-80	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-95	75-90	65-90	50-80	20-36	4-16
Losantville-----	0-5	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-2	90-100	85-100	80-95	50-85	15-40	NP-15
	5-18	Clay, clay loam	CH, CL	A-6, A-7, A-7-6	0	0-2	90-100	80-98	75-95	55-80	30-60	10-35
	18-80	Loam	CL, ML, SC, SM	A-4, A-6	0	0-5	100	80-95	75-90	45-70	15-30	NP-15
CmA:												
Clermont--------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	85-95	75-90	20-40	3-20
	9-14	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	85-95	75-90	20-40	3-20
	14-22	Silty clay loam, silt loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	85-95	30-45	12-25
	22-56	Silty clay loam, clay loam	CL	A-6, A-7	0	0	95-100	85-100	75-100	65-95	30-45	12-25
	56-80	Clay loam, clay, silty clay	CL	A-6, A-7	0	0	95-100	85-100	75-95	65-90	30-50	12-28

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
CpA:												
Coblen----------	0-17	Loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	85-100	70-90	20-40	3-15
	17-41	Silt loam, fine sandy loam, sandy loam	CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	80-95	75-90	70-90	20-45	4-20
	41-49	Extremely gravelly loamy sand, gravelly sandy loam	ML, SC, SC-SM, SM	A-2, A-4, A-6	0	0	90-100	75-100	45-95	25-75	15-30	NP-15
	49-80	Gravelly sandy loam, extremely gravelly sandy loam, gravelly loam, extremely gravelly loamy sand	CL, ML, SC, SM	A-1-b, A-2, A-4, A-6	0	0-5	80-100	50-100	30-95	15-75	15-30	NP-15
CrB:												
Corwin----------	0-12	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-1	98-100	95-100	90-100	55-90	15-40	3-15
	12-22	Clay loam, silty clay loam	CL, CL-ML	A-4, A-6, A-7-6	0	0-1	90-100	85-100	75-95	50-80	20-50	5-30
	22-26	Clay loam, silty clay	CL	A-6, A-7-6	0	0-1	90-100	85-100	80-95	50-80	30-50	10-30
	26-36	Clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	90-100	85-95	75-90	45-80	15-40	NP-25
	36-80	Loam, silt loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	90-100	85-95	75-90	45-80	15-30	NP-15
CtA:												
Crosby----------	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-85	15-40	NP-15
	10-28	Clay loam, silty clay loam, silty clay, clay	CH, CL	A-6, A-7-6	0-1	0-3	90-100	85-100	75-95	55-90	30-60	10-35
	28-34	Loam, clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	85-100	80-98	65-90	40-70	15-35	NP-20
	34-80	Loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	85-100	80-98	65-90	40-70	15-30	NP-15

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
CtA:												
Celina----------	0-10	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	10-24	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	24-80	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-95	75-90	65-90	50-80	20-36	4-16
CtB:												
Crosby----------	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-85	15-40	NP-15
	8-28	Clay loam, silty clay loam, silty clay, clay	CH, CL	A-6, A-7-6	0-1	0-3	90-100	85-100	75-95	55-90	30-60	10-35
	28-35	Loam, fine sandy loam, clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	85-100	80-98	65-90	40-70	15-35	NP-20
	35-80	Loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	85-100	80-98	65-90	40-70	15-30	NP-15
Celina----------	0-8	Silt loam	ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	8-26	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	26-80	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6	0	0	75-95	75-90	65-90	50-80	20-36	4-16
CuC2:												
Crouse----------	0-10	Silt loam	ML	A-6	0	0-5	90-100	85-100	75-100	55-90	28-45	5-15
	10-44	Clay loam, silty clay loam, loam	CL, CL-ML	A-6	0	0-5	90-100	85-100	80-100	60-95	25-45	5-15
	44-80	Loam, clay loam	CL, ML	A-6, A-7-6	0	0-5	85-100	75-95	65-95	50-85	30-45	NP-21
Miamian---------	0-8	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	8-15	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	15-40	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	40-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
CuD2:												
Crouse----------	0-10	Silt loam	ML	A-6	0	0-5	90-100	85-100	75-100	55-90	28-45	5-15
	10-68	Clay loam, silty clay loam, loam	CL, CL-ML	A-6	0	0-5	90-100	85-100	80-100	60-95	25-45	5-15
	68-80	Loam, clay loam	CL, ML	A-6, A-7-6	0	0-5	85-100	75-95	65-95	50-85	30-45	NP-21
Miamian---------	0-4	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	4-12	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	12-36	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	36-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	25-40	7-12
DhA:												
Dunham----------	0-19	Silt loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-15
	19-44	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	98-100	90-100	85-95	35-45	15-25
	44-50	Clay loam, silt loam, gravelly sandy loam	CL, SC	A-2, A-4, A-6	0	0-5	90-100	80-100	55-90	30-80	25-40	8-20
	50-80	Gravelly sand, extremely gravelly coarse sand	GM, GP-GM, SM, SP-SM	A-1	0-3	0-10	35-75	30-70	10-40	2-25	0-0	NP

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
DuA:												
Dunham----------	0-16	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	30-50	15-30
	16-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	98-100	90-100	85-95	35-45	15-25
	34-52	Gravelly silt loam, clay loam, silt loam, gravelly sandy loam, gravelly clay loam	CL, SC	A-2, A-4, A-6	0	0-5	90-100	80-100	55-90	30-80	25-40	8-20
	52-80	Gravelly sand, extremely gravelly coarse sand, gravelly loamy sand, very gravelly loamy sand	GM, GP-GM, SM, SP-SM	A-1	0-3	0-10	35-75	30-70	10-40	2-25	0-0	NP
EgB:												
Eldean----------	0-12	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	85-100	80-100	70-100	55-90	20-40	4-14
	12-27	Clay, sandy clay, gravelly clay loam, gravelly clay, clay loam	CL, ML	A-6, A-7	0	0-5	75-100	60-100	55-95	50-80	38-50	12-23
	27-30	Very gravelly clay loam, loam, gravelly sandy loam	CL, GC, SC	A-2, A-6, A-7	0	0-10	55-85	45-85	45-75	30-60	38-50	12-23
	30-80	Stratified sand to extremely gravelly loamy sand	GM, GP-GM, SM, SP-SM	A-1, A-2	0	0-15	30-70	20-50	5-40	0-35	0-14	NP

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
EkC2: Eldean----------	0-3	Gravelly loam	CL-ML, GM, ML, SM	A-4, A-6	0	0-10	65-90	60-80	55-75	40-60	25-40	4-12
	3-16	Clay, sandy clay, gravelly clay loam, gravelly clay	CL, ML	A-6, A-7	0	0-5	75-100	60-100	55-95	50-80	38-50	12-23
	16-22	Very gravelly clay loam, loam, gravelly sandy loam	CL, GC, SC	A-2, A-4, A-6, A-7	0	0-10	55-85	45-85	45-75	30-60	30-45	8-20
	22-80	Stratified sand to extremely gravelly loamy sand	GM, GP-GM, SM, SP-SM	A-1, A-2	0	0-15	30-70	20-50	5-40	0-35	0-14	NP
FgA: Fincastle-------	0-13	Silt loam	CL, CL-ML, ML	A-4	0	0	100	95-100	90-100	75-93	0-25	3-10
	13-27	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-15
	27-50	Clay loam, loam, silty clay loam	CL	A-6	0	0	95-100	90-98	85-95	75-85	30-40	10-15
	50-80	Loam	CL	A-4, A-6	0	0-3	88-96	82-90	70-86	50-66	25-30	8-11
FgB: Fincastle-------	0-8	Silt loam	CL-ML, ML, CL	A-4	0	0	100	95-100	90-100	75-93	0-25	3-10
	8-32	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-15
	32-41	Clay loam, loam, silty clay loam	CL	A-6	0	0	95-100	90-98	85-95	75-85	30-40	10-15
	41-80	Loam	CL	A-4, A-6	0	0-3	88-96	82-90	70-86	50-66	25-30	8-11

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
FnA:												
Fox	0-10	Silt loam	CL, CL-ML, ML	A-4	0	0	95-100	95-100	85-95	65-90	0-25	3-8
	10-32	Clay loam, sandy clay loam, gravelly loam, gravelly clay loam	CL, GC, SC	A-2, A-6, A-7	0-1	0-5	65-100	55-100	30-100	15-80	22-45	10-25
	32-80	Sand and gravel, sand, coarse sand, very gravelly loamy coarse sand	GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-10	30-100	20-95	10-90	2-10	0-14	NP
FnB:												
Fox	0-8	Silt loam	CL, CL-ML, ML	A-4	0	0	95-100	95-100	85-95	65-90	0-25	3-8
	8-35	Clay loam, sandy clay loam, gravelly loam, gravelly clay loam, very gravelly sandy loam, gravelly sandy loam	CL, GC, SC	A-2, A-6, A-7	0-1	0-5	65-100	55-100	30-100	15-80	22-45	10-25
	35-80	Sand and gravel, sand, coarse sand, very gravelly loamy coarse sand	GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-10	30-100	20-95	10-90	2-10	0-14	NP

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
FnC2:												
Fox	0-9	Silt loam	CL, CL-ML, ML	A-4	0	0	95-100	95-100	85-95	65-90	0-25	3-8
	9-29	Clay loam, sandy clay loam, gravelly loam, gravelly clay loam, very gravelly clay loam	CL, GC, SC	A-2, A-6, A-7	0-1	0-5	65-100	55-100	30-100	15-80	22-45	10-25
	29-80	Sand and gravel, sand, coarse sand, very gravelly loamy coarse sand	GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-10	30-100	20-95	10-90	2-10	0-14	NP
HkD2:												
Hickory	0-6	Silt loam	CL	A-4, A-6	0	0-1	95-100	90-100	90-100	75-95	20-35	8-15
	6-65	Clay loam, loam, silty clay loam, gravelly clay loam	CL	A-6, A-7	0-1	0-5	95-100	90-100	70-100	65-80	30-50	15-30
	65-80	Gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
HkE2:												
Hickory	0-8	Silt loam	CL	A-4, A-6	0	0-1	95-100	90-100	90-100	75-95	20-35	8-15
	8-60	Clay loam, loam, silty clay loam	CL	A-6, A-7	0-1	0-5	95-100	90-100	70-100	65-80	30-50	15-30
	60-80	Clay loam, loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
HkF2:												
Hickory	0-5	Silt loam	CL	A-4, A-6	0	0-1	95-100	90-100	90-100	75-95	20-35	8-15
	5-8	Loam	CL	A-6	0	0-5	95-100	90-100	80-100	75-95	25-40	10-20
	8-53	Clay loam, loam, gravelly clay loam	CL	A-6, A-7	0-1	0-5	95-100	90-100	70-100	65-80	30-50	15-30
	53-80	Gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HnE2:												
Hickory---------	0-4	Silt loam	CL	A-6, A-4	0	0-1	95-100	90-100	90-100	75-95	20-35	8-15
	4-48	Clay loam, loam	CL	A-6, A-7	0-1	0-5	95-100	90-100	70-100	65-80	30-50	15-30
	48-80	Clay loam, loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
Morrisville-----	0-3	Silt loam	CL	A-6	0	0	95-100	95-100	90-100	70-95	35-40	15-20
	3-15	Clay loam, clay, silty clay	CH, CL	A-7	0	0-10	95-100	80-100	75-95	70-90	40-62	21-35
	15-47	Silty clay, clay, flaggy silty clay loam	CH, CL	A-7	0-30	0-10	75-95	75-90	65-85	50-75	45-65	25-39
	47-54	Unweathered bedrock			---	---	---	---	---	---	---	---
JrA:												
Jonesboro-------	0-7	Silt loam	ML	A-4	0	0	100	100	95-100	75-95	20-30	2-10
	7-18	Silty clay loam, silt loam	CL, ML	A-6	0	0	100	100	95-100	75-95	30-48	10-20
	18-28	Silty clay loam, silt loam	CL	A-6	0	0	95-100	95-100	90-100	70-95	30-48	10-20
	28-80	Clay, silty clay, silty clay loam, clay loam	CL	A-7-6, A-6	0	0-3	95-100	95-100	75-95	60-85	30-48	10-20
Rossmoyne-------	0-9	Silt loam	ML	A-4	0	0	100	100	95-100	90-100	30-40	4-10
	9-26	Silty clay loam, silt loam	CL, ML	A-4, A-6, A-7	0	0	100	95-100	85-100	80-95	30-48	8-20
	26-37	Clay loam, loam, silty clay loam	CL	A-4, A-6	0	0	90-100	85-95	80-90	70-85	25-40	9-19
	37-80	Clay loam, loam, clay	CL	A-4, A-6, A-7	0	0	80-95	70-90	65-85	60-80	25-42	8-20

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
JrB:												
Jonesboro-------	0-9	Silt loam	ML	A-4	0	0	100	100	95-100	75-95	20-30	2-10
	9-20	Silty clay loam, silt loam	CL, ML	A-6	0	0	100	100	95-100	75-95	30-48	10-20
	20-28	Silty clay loam, silt loam	CL	A-6	0	0	95-100	95-100	90-100	70-95	30-48	10-20
	28-80	Clay, silty clay, silty clay loam, clay loam	CL	A-6	0	0-3	95-100	95-100	75-95	60-85	30-48	10-20
Rossmoyne-------	0-8	Silt loam	ML	A-4	0	0	100	100	95-100	90-100	30-40	4-10
	8-25	Silty clay loam, silt loam	CL, ML	A-4, A-6, A-7	0	0	100	95-100	85-100	80-95	30-48	8-20
	25-39	Clay loam, loam, silty clay loam	CL	A-4, A-6	0	0	90-100	85-95	80-90	70-85	25-40	9-19
	39-80	Clay loam, loam, clay	CL	A-4, A-6, A-7	0	0	80-95	70-90	65-85	60-80	25-42	8-20
JrC2:												
Jonesboro-------	0-5	Silt loam	ML	A-4	0	0	100	100	95-100	75-95	20-30	2-10
	5-14	Silty clay loam, silt loam	CL, ML	A-6	0	0	100	100	95-100	75-95	30-48	10-20
	14-26	Silty clay loam	CL	A-6	0	0	95-100	95-100	90-100	70-95	30-48	10-20
	26-80	Clay, silty clay, silty clay loam, clay loam	CL	A-6	0	0-3	95-100	95-100	75-95	60-85	30-48	10-20
Rossmoyne-------	0-4	Silt loam	ML	A-4	0	0	100	100	95-100	90-100	30-40	4-10
	4-22	Silty clay loam, silt loam	CL, ML	A-4, A-6, A-7	0	0	100	95-100	85-100	80-95	30-48	8-20
	22-30	Clay loam, loam, silty clay loam	CL	A-4, A-6	0	0	90-100	85-95	80-90	70-85	25-40	9-19
	30-80	Clay loam, loam, clay	CL	A-4, A-6, A-7	0	0	80-95	70-90	65-85	60-80	25-42	8-20

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
KnA:												
Kokomo	0-22	Silt loam	CL	A-6	0	0	90-100	85-100	70-100	50-85	25-40	10-20
	22-54	Silty clay loam, clay loam, silty clay	CH, CL	A-7, A-7-6	0	0-1	90-100	85-100	75-100	55-95	40-60	20-35
	54-80	Loam, clay loam	CL, CL-ML, ML, SC	A-4, A-6	0-1	0-3	90-100	85-100	70-95	45-70	15-30	NP-15
KoA:												
Kokomo	0-10	Silty clay loam	CH, CL, MH, ML	A-6, A-7-6	0	0	90-100	85-100	75-100	55-95	35-55	10-30
	10-51	Silty clay loam, clay loam, silty clay	CL, CH	A-7-6	0	0-1	90-100	85-100	75-100	55-95	40-60	20-35
	51-80	Loam	CL, CL-ML, ML, SC	A-4, A-6	0-1	0-3	90-100	85-100	70-95	45-70	15-30	NP-15
LbA:												
Libre	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-100	20-35	7-15
	7-34	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-95	25-40	7-15
	34-48	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	7-15
	48-80	Loam, clay loam, sandy clay loam, gravelly clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-95	55-95	40-80	25-35	7-15
LbB:												
Libre	0-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-100	20-35	7-15
	10-33	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-95	25-40	7-15
	33-53	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	7-15
	53-80	Loam, clay loam, sandy clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-95	55-95	40-80	25-35	7-15

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
LbC2:												
Libre----------	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-100	20-35	7-15
	7-30	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	85-95	25-40	7-15
	30-55	Loam, clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	7-15
	55-80	Loam, clay loam, sandy clay loam, gravelly clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-95	55-95	40-80	25-35	7-15
LoC2:												
Loudon----------	0-8	Silt loam	CL-ML, ML	A-4, A-6	0	0	100	95-100	85-100	65-90	25-40	4-12
	8-17	Silt loam, silty clay loam	CL, ML	A-4, A-6	0	0	100	95-100	90-100	75-95	30-40	6-16
	17-55	Silty clay loam, silty clay, clay	CH, CL	A-6, A-7	0	0-5	85-100	75-95	70-95	65-90	35-55	15-30
	55-68	Silty clay, clay, channery clay	CH, CL	A-7	0	0-5	85-100	75-100	70-100	65-95	45-65	20-35
	68-80	Weathered bedrock			---	---	---	---	---	---	---	---
LuA:												
Lumberton-------	0-9	Silt loam	CL-ML, ML	A-4	0	0	95-100	95-100	90-100	70-90	26-30	4-12
	9-14	Clay loam, silt loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	70-95	30-45	15-25
	14-38	Clay loam, silty clay loam	CL	A-7	0	0	90-100	90-100	90-100	75-95	32-45	15-30
	38-54	Sandy loam, very channery fine sandy loam	SC, SC-SM, SM	A-2-6, A-4, A-2-4	0-5	0-5	85-95	85-95	60-75	30-45	20-40	3-15
	54-58	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
LuB:												
Lumberton-------	0-8	Silt loam	CL-ML, ML	A-4	0	0	95-100	95-100	90-100	70-90	26-30	4-12
	8-35	Clay loam, silty clay loam	CL	A-7	0	0	90-100	90-100	90-100	75-95	32-45	15-30
	35-45	Sandy loam, very channery fine sandy loam	SC, SC-SM, SM	A-2-4, A-2-6, A-4	0-5	0-5	85-95	85-95	60-75	30-45	20-40	3-15
	45-50	Unweathered bedrock			---	---	---	---	---	---	---	---
LuC2:												
Lumberton-------	0-4	Silt loam	CL-ML, ML	A-4	0	0	95-100	95-100	90-100	70-90	26-30	4-12
	4-28	Clay loam, silty clay loam	CL	A-7	0	0	90-100	90-100	90-100	75-95	32-45	15-30
	28-41	Sandy loam, very channery loamy fine sand, very channery sandy loam	SC, SC-SM, SM	A-2-4, A-2-6, A-4	0-5	0-5	85-95	85-95	60-75	30-45	20-40	3-15
	41-45	Unweathered bedrock			---	---	---	---	---	---	---	---
LuD2:												
Lumberton-------	0-3	Silt loam	CL-ML, ML	A-4	0	0	95-100	95-100	90-100	70-90	26-30	4-12
	3-54	Clay loam, silty clay loam	CL	A-7	0	0	90-100	90-100	90-100	75-95	32-45	15-30
	54-60	Unweathered bedrock			---	---	---	---	---	---	---	---
LuF2:												
Lumberton-------	0-3	Silt loam	CL-ML, ML	A-4	0	0	95-100	95-100	90-100	70-90	26-30	4-12
	3-8	Clay loam, silt loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	70-95	30-45	15-25
	8-34	Clay loam, silty clay loam	CL	A-7	0	0	90-100	90-100	90-100	75-95	32-45	15-30
	34-40	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
MhB2:												
Miamian----------	0-9	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	9-12	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	12-24	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	24-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
MhC2:												
Miamian----------	0-5	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	5-12	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	12-27	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	27-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
MhD2:												
Miamian----------	0-3	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	3-10	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	10-22	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	22-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
MnE2:												
Miamian----------	0-4	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	4-14	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	14-38	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	38-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
Thrifton---------	0-4	Loam	CL	A-6, A-7	0	0-5	85-100	80-100	75-95	70-85	35-50	15-30
	4-19	Clay loam, loam	CL	A-6, A-7	0	0-5	85-100	80-100	75-95	70-85	35-50	15-30
	19-80	Loam, channery loam, gravelly loam	CL-ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-35	3-13

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
MnF2:												
Miamian----------	0-7	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	7-14	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	14-38	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	38-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
Thrifton---------	0-4	Loam	CL	A-6, A-7	0	0-5	85-100	80-100	75-95	70-85	35-50	15-30
	4-18	Clay loam, loam, gravelly loam	CL	A-6, A-7	0	0-5	85-100	80-100	75-95	70-85	35-50	15-30
	18-80	Loam, gravelly loam	CL-ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-35	3-13
MoE2:												
Miamian----------	0-8	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	8-14	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	14-33	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	33-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
Crouse-----------	0-8	Silt loam	ML	A-6	0	0-5	90-100	85-100	75-100	55-90	28-45	5-15
	8-70	Clay loam, silty clay loam, loam	CL, CL-ML	A-6	0	0-5	90-100	85-100	80-100	60-95	25-45	5-15
	70-80	Loam, clay loam	CL, ML	A-6, A-7-6	0	0-5	85-100	75-95	65-95	50-85	30-45	NP-21
MoF2:												
Miamian----------	0-6	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	7-12
	6-12	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	12-29	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	29-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
Crouse-----------	0-10	Silt loam	ML	A-6	0	0-5	90-100	85-100	75-100	55-90	28-45	5-15
	10-60	Clay loam, silty clay loam, loam	CL, CL-ML	A-6	0	0-5	90-100	85-100	80-100	60-95	25-45	5-15
	60-80	Loam, clay loam	CL, ML	A-6, A-7-6	0	0-5	85-100	75-95	65-95	50-85	30-45	NP-21

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
MvD2:												
Morrisville-----	0-5	Silty clay loam	CL	A-6	0	0	95-100	95-100	90-100	70-95	35-40	15-20
	5-12	Clay loam, clay, silty clay, silty clay loam	CH, CL	A-7	0	0-10	95-100	80-100	75-95	70-90	40-62	21-35
	12-45	Silty clay, clay, flaggy silty clay loam	CH, CL	A-7	0-30	0-10	75-95	75-90	65-85	50-75	45-65	25-39
	45-50	Unweathered bedrock			---	---	---	---	---	---	---	---
MvE2:												
Morrisville-----	0-3	Silty clay loam	CL	A-6	0	0	95-100	95-100	90-100	70-95	35-40	15-20
	3-12	Clay loam, clay, silty clay, silty clay loam	CH, CL	A-7	0	0-10	95-100	80-100	75-95	70-90	40-62	21-35
	12-22	Silty clay, clay, channery clay, channery silty clay	CH, CL	A-7	0-30	0-10	75-95	75-90	65-85	50-75	45-65	25-39
	22-54	Extremely flaggy silty clay, very flaggy silty clay loam, very flaggy silty clay, flaggy clay	CH, CL	A-7	0-30	0-10	75-95	75-90	65-85	50-75	45-65	25-39
	54-60	Unweathered bedrock			---	---	---	---	---	---	---	---
NhC2:												
Nicely----------	0-7	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	65-100	28-45	5-15
	7-18	Silty clay loam, silt loam	CL, ML	A-6, A-7	0	0	85-100	70-100	65-95	50-85	30-45	NP-25
	18-80	Clay loam	CL	A-6, A-7-6	0	0	85-100	70-95	65-95	45-75	35-50	15-25

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
OcA:												
Ockley----------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	85-100	70-100	50-90	23-40	3-15
	9-20	Silt loam, loam, silty clay loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6, A-7-6	0	0-1	90-100	85-100	70-100	30-95	20-50	5-35
	20-64	Sandy clay loam, gravelly sandy loam, clay loam, gravelly clay loam, very gravelly sandy clay loam	CL, ML, SC, SM	A-2, A-4, A-6, A-7-6	0	0-2	70-85	45-85	25-75	15-60	10-50	NP-35
	64-80	Gravelly loamy coarse sand, very gravelly coarse sand, very gravelly loamy sand, sandy loam, gravelly loamy sand	GP, GW-GM, SP-SM, SW	A-1	0-2	1-10	30-70	20-55	10-30	2-10	0-0	NP
OcB:												
Ockley----------	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	85-100	70-100	50-90	23-40	3-15
	10-41	Clay loam, sandy clay loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6, A-7-6	0	0-1	90-100	85-100	70-100	30-95	20-50	5-35
	41-66	Sandy clay loam, gravelly sandy loam, gravelly clay loam, clay loam	CL, ML, SC, SM	A-2, A-4, A-6, A-7-6	0	0-2	70-85	45-85	25-75	15-60	10-50	NP-35
	66-80	Gravelly loamy coarse sand, very gravelly coarse sand, gravelly coarse sand	GP, GW-GM, SP-SM, SW	A-1	0-2	1-10	30-70	20-55	10-30	2-10	0-0	NP

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
OdA:												
Ockley----------	0-15	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	80-100	60-90	20-30	4-11
	15-35	Clay loam	CL	A-6, A-7	0	0	100	90-100	80-100	60-95	35-45	15-20
	35-58	Gravelly clay loam, very gravelly clay loam	SC	A-2-4, A-2-6, A-4, A-6	0	0	95-100	80-95	55-85	25-50	25-40	7-16
	58-65	Very gravelly sandy loam	GC, SC	A-2-4, A-2-6, A-4, A-6	0	0-5	65-85	60-75	50-70	20-40	25-35	7-15
	65-80	Loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0-5	90-100	80-95	55-85	30-70	10-25	3-7
OdB:												
Ockley----------	0-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	80-100	60-90	20-30	4-11
	10-39	Clay loam	CL	A-6, A-7	0	0	100	90-100	80-100	60-95	35-45	15-20
	39-65	Gravelly clay loam, very gravelly clay loam	SC	A-2-4, A-2-6, A-4, A-6	0	0	95-100	80-95	55-85	25-50	25-40	7-16
	65-80	Loam, gravelly loam	SC-SM, SM, CL-ML, ML	A-2-4, A-4	0	0-5	90-100	80-95	55-85	30-70	10-25	3-7
OdC2:												
Ockley----------	0-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	80-100	60-90	20-30	4-11
	10-40	Clay loam	CL	A-6, A-7	0	0	100	90-100	80-100	60-95	35-45	15-20
	40-72	Gravelly clay loam, very gravelly clay loam	SC	A-2-4, A-2-6, A-4, A-6	0	0	95-100	80-95	55-85	25-50	25-40	7-16
	72-80	Loam, gravelly loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0-5	90-100	80-95	55-85	30-70	10-25	3-7
OeA:												
Odell-----------	0-12	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	50-90	20-35	5-15
	12-46	Clay loam, loam, silty clay loam, clay	CL	A-4, A-6	0	0	95-100	90-100	75-100	50-95	25-40	7-15
	46-55	Loam, clay loam	CL, CL-ML	A-4	0	0-3	95-100	85-100	70-95	50-75	0-30	4-10
	55-80	Loam	CL, CL-ML, ML	A-4	0	0-3	95-100	85-100	70-95	50-75	0-25	3-8
Pg. Pits, gravel												
Pk. Pits, quarry												

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
RcA:												
Randolph	0-13	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	75-85	20-38	4-15
	13-37	Clay, silty clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0-1	0-5	80-100	75-100	75-95	70-85	35-60	14-32
	37-43	Unweathered bedrock			---	---	---	---	---	---	---	---
ReA:												
Reesville	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	90-100	90-100	85-100	25-35	4-10
	8-47	Silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	90-100	90-100	90-100	20-50	4-28
	47-54	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	80-90	20-40	4-20
	54-80	Loam, silt loam, clay loam	CL, CL-ML, ML	A-4, A-6	0	0	90-100	85-95	80-90	70-90	20-40	3-18
ReB:												
Reesville	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	90-100	90-100	85-100	25-35	4-10
	8-35	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	90-100	90-100	90-100	20-50	4-28
	35-48	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	80-90	20-40	4-20
	48-80	Loam, silt loam	CL, CL-ML, ML	A-4, A-6	0	0	90-100	85-95	80-90	70-90	20-40	3-18
RnA:												
Ross	0-14	Loam	CL, CL-ML, ML	A-4, A-6	0	0	90-100	90-100	80-100	65-95	20-35	NP-12
	14-31	Loam, silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	90-100	85-100	70-100	55-95	22-45	3-20
	31-80	Stratified gravelly sandy loam to silt loam, stratified coarse sandy loam to sandy loam	CL, GM, ML, SM	A-2, A-4, A-6	0	0-5	65-100	45-100	30-100	25-80	0-30	NP-12
RoA:												
Ross	0-25	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	90-100	90-100	80-100	65-95	20-35	NP-12
	25-80	Stratified sandy loam to gravelly sandy loam to loam to silt loam	CL, GM, ML, SM	A-2, A-4, A-6	0	0-5	65-100	45-100	30-100	25-80	0-30	NP-12

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
RsA:												
Rossburg--------	0-21	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	60-90	20-35	5-15
	21-45	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	70-95	50-80	20-35	5-15
	45-80	Gravelly sandy loam, very gravelly sandy loam, very gravelly loam, stratified gravelly sandy loam to loam to silt loam	CL, ML, SC, SM	A-2-4, A-4	0	0	80-100	50-100	45-90	27-70	15-25	NP-10
RuB2:												
Russell---------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-35	5-15
	8-26	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-25
	26-49	Clay loam, loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-95	80-90	60-80	35-45	15-25
	49-80	Loam, fine sandy loam	CL, CL-ML	A-4, A-6	0	0-3	85-95	80-90	75-85	50-65	20-30	5-12
Xenia-----------	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-35	5-15
	6-26	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-25
	26-43	Clay loam, loam	CL	A-6, A-7	0	0-5	90-100	85-95	70-95	50-80	30-45	10-25
	43-80	Loam	CL, CL-ML	A-4, A-6	0	0-5	90-95	85-95	65-95	50-75	20-30	5-15
SaA:												
Sardinia--------	0-8	Silt loam	CL-ML, ML	A-4	0	0	90-100	85-100	75-95	60-85	20-45	6-15
	8-66	Silty clay loam, silt loam	CL, ML	A-6, A-7	0	0	90-100	85-100	80-100	65-100	30-50	10-20
	66-80	Stratified gravelly sandy clay loam to clay loam to silty clay loam	CL, GC-GM, ML, SC	A-2, A-4, A-6	0	0	65-95	50-90	45-80	25-55	30-40	5-15

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SaB:												
Sardinia	0-8	Silt loam	CL-ML, ML	A-4	0	0	90-100	85-100	75-95	60-85	20-45	6-15
	8-50	Silty clay loam, silt loam	CL, ML	A-6, A-7	0	0	90-100	85-100	80-100	65-100	30-50	10-20
	50-64	Clay loam, silty clay loam, loam, sandy clay loam	ML, SC, CL, GC	A-2, A-4, A-6	0	0	90-100	85-100	45-95	25-85	30-45	NP-21
	64-80	Stratified gravelly sandy clay loam to silty clay loam	CL, GC-GM, ML, SC	A-2, A-4, A-6	0	0	65-95	50-90	45-80	25-55	30-45	NP-21
ScA:												
Secondcreek	0-20	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	75-95	20-30	4-15
	20-42	Silty clay	CH, CL	A-7	0	0	100	100	95-100	90-100	45-55	30-42
	42-57	Silty clay loam, clay loam	CH, CL	A-7	0	0	100	95-100	75-95	60-85	45-55	30-42
	57-80	Clay loam, silty clay loam	CL	A-6, A-7	0	0-3	95-100	95-100	75-95	60-85	30-48	10-20
SeA:												
Secondcreek	0-23	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	95-100	75-95	30-48	10-20
	23-44	Silty clay	CH, CL	A-7	0	0	100	100	95-100	90-100	45-55	30-42
	44-57	Silty clay loam	CH, CL	A-7	0	0	100	100	95-100	90-100	45-55	30-42
	57-80	Clay loam, silty clay loam	CL	A-6, A-7	0	0-3	95-100	95-100	75-95	60-85	30-48	10-20
ShA:												
Shoals	0-12	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	50-100	20-40	3-20
	12-38	Silt loam, loam, clay loam	CL, CL-ML, ML	A-4, A-6, A-7-6	0	0	100	95-100	75-100	50-100	20-50	3-30
	38-80	Stratified sand to loam to clay loam	CL-ML, ML, SM, SP-SM	A-2-4, A-2-6, A-4, A-6	0	0-3	90-100	75-100	50-100	5-100	0-40	NP-15

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
SmA:												
Sligo----------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	70-85	20-40	5-20
	9-58	Loam, sandy loam, loamy coarse sand	CL-ML, ML	A-4, A-6	0	0	100	95-100	80-100	70-85	20-45	6-15
	58-80	Coarse sand, loamy coarse sand, very gravelly coarse sand, extremely gravelly loamy coarse sand	GM, SM	A-1	0	0-65	35-100	30-100	10-40	5-15	0-15	NP-2
SnA:												
Sloan-----------	0-21	Silt loam	CL, CL-ML	A-4, A-6	0	0	90-100	90-100	75-95	55-85	20-35	5-15
	21-48	Loam, silty clay loam, clay loam	CL	A-6, A-7	0	0	85-95	85-95	65-95	50-85	30-50	10-30
	48-68	Gravelly loam, stratified sandy loam to gravelly loam	CL, CL-ML, SC	A-4, A-6, A-7	0	0	85-95	50-95	45-95	35-85	20-45	5-20
	68-80	Coarse sand, gravelly sand, gravelly loamy sand	SM, SP, SP-SM	A-1, A-2, A-3	0	0-5	55-90	50-90	20-60	3-15	0-20	NP-5
SrA:												
Stringley-------	0-6	Loam	CL-ML, ML	A-4	0	0	90-100	80-100	65-95	50-75	20-45	6-15
	6-48	Loamy sand, sandy loam	SC-SM, SM, SP-SM	A-2-4, A-4	0	0	90-100	80-100	50-80	10-50	0-23	NP-7
	48-80	Very gravelly loamy sand, extremely gravelly loamy sand	GP, GP-GM, SP, SP-SM	A-1	0	0-5	30-70	20-55	10-25	2-10	0-0	NP

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SrA:												
Sligo	0-6	Loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	70-85	25-40	5-20
	6-48	Loam, sandy loam, silt loam	CL-ML, ML	A-4, A-6	0	0	100	95-100	80-100	70-85	20-45	6-15
	48-80	Coarse sand, loamy coarse sand, very gravelly coarse sand, extremely gravelly loamy coarse sand	GM, SM	A-1	0	0-65	35-100	30-100	10-40	5-15	0-15	NP-2
TaA:												
Taggart	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	70-90	22-40	1-16
	10-55	Silty clay loam, silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	70-90	22-40	1-16
	55-80	Loam, clay loam, sandy clay loam	CL, CL-ML	A-4, A-6, A-7-6	0	0-1	90-100	80-100	70-95	50-85	23-50	5-29
TpA:												
Treaty	0-14	Silt loam	CL, ML	A-4, A-6	0	0	100	100	90-100	75-90	23-40	NP-17
	14-38	Silty clay loam	CH, CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	75-100	24-55	5-31
	38-55	Clay loam, silty clay loam, loam	CH, CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	90-100	90-100	75-100	25-55	6-31
	55-80	Loam, fine sandy loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	95-100	90-95	65-90	40-70	15-30	NP-15
TrA:												
Treaty	0-16	Silty clay loam	CH, CL	A-6, A-7-6	0	0	100	100	95-100	85-100	35-55	11-31
	16-32	Silty clay loam	CH, CL, CL-ML	A-4, A-6, A-7-6	0	0	100	100	90-100	75-100	24-55	5-31
	32-63	Clay loam, silty clay loam, loam	CH, CL, CL-ML	A-4, A-6, A-7-6	0	0	95-100	90-100	90-100	75-100	25-55	6-31
	63-80	Loam, fine sandy loam	SC, SM, CL, ML	A-4, A-6	0-1	0-3	95-100	90-95	65-90	40-70	15-30	NP-15
Ud.												
Udorthents												

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
W. Water												
WaC3:												
Wapahani--------	0-3	Clay loam	CL	A-6, A-7-6	0-1	0-3	95-100	90-100	85-100	60-85	30-50	12-32
	3-18	Clay loam, loam	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-3	90-100	85-100	75-95	55-75	25-50	7-32
	18-80	Loam, fine sandy loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	90-98	85-98	65-95	40-70	15-30	NP-15
Miamian---------	0-3	Clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-95	60-80	35-45	15-20
	3-8	Silt loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-95	70-85	35-45	10-20
	8-28	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	28-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
WaD3:												
Wapahani--------	0-3	Clay loam	CL	A-6, A-7-6	0-1	0-3	95-100	90-100	85-100	60-85	30-50	12-32
	3-19	Clay loam, loam	CL, CL-ML	A-4, A-6, A-7-6	0-1	0-3	90-100	85-100	75-95	55-75	25-50	7-32
	19-80	Loam, fine sandy loam	CL, ML, SC, SM	A-4, A-6	0-1	0-3	90-98	85-98	65-95	40-70	20-45	6-15
Miamian---------	0-3	Clay loam	CL	A-6, A-7	0	0	90-100	85-100	75-95	60-80	35-45	15-20
	3-24	Clay loam, clay	CL	A-6, A-7-6	0	0-5	85-100	80-100	75-95	70-85	40-55	20-30
	24-80	Loam, gravelly loam	CL-ML, ML	A-4, A-6	0	0-5	75-95	75-90	65-85	50-75	20-45	6-15
WcA:												
Westboro--------	0-11	Silt loam	ML	A-4	0	0	100	100	95-100	75-95	20-30	2-10
	11-27	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100	75-95	30-48	10-20
	27-37	Silty clay loam, silt loam	CL	A-6	0	0	95-100	95-100	90-100	70-95	30-48	10-20
	37-80	Silty clay loam, clay loam	CL	A-6, A-7	0	0-3	95-100	95-100	75-95	60-85	30-48	10-20

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
WcA:												
Schaffer--------	0-11	Silt loam	CL-ML, ML	A-4	0	0	100	100	95-100	75-95	20-30	2-10
	11-26	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-95	25-45	5-20
	26-36	Clay loam, loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0	90-100	85-100	75-95	75-85	25-45	5-20
	36-80	Clay loam, loam	CL	A-6, A-7	0-1	0-1	90-100	85-95	70-90	55-70	35-45	15-25
WcB:												
Westboro--------	0-8	Silt loam	ML	A-4	0	0	100	100	95-100	75-95	20-30	2-10
	8-21	Silty clay loam	CL	A-6	0	0	100	100	95-100	75-95	30-48	10-20
	21-30	Silty clay loam, silt loam	CL	A-6	0	0	95-100	95-100	90-100	70-95	30-48	10-20
	30-80	Silty clay loam, clay loam	CL	A-6, A-7	0	0-3	95-100	95-100	75-95	60-85	30-48	10-20
Schaffer--------	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	100	95-100	75-95	20-30	2-10
	8-28	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	85-95	25-45	5-20
	28-38	Clay loam, loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0	90-100	85-100	75-95	75-85	25-45	5-20
	38-80	Clay loam, loam	CL	A-6, A-7	0-1	0-1	90-100	85-95	70-90	55-70	35-45	15-25

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
WmA:												
Williamsburg----	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-90	25-35	3-13
	10-15	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-100	25-40	3-18
	15-52	Clay loam, sandy clay loam, sandy loam	CL, SC	A-6, A-7	0	0	90-100	85-100	75-95	45-75	30-45	15-25
	52-65	Gravelly clay loam, sandy clay loam, gravelly sandy clay loam	CL, SC	A-2, A-6, A-7	0	0	80-100	50-95	45-90	25-70	30-50	15-30
	65-80	Gravelly loam, sandy loam, sandy clay loam, stratified loamy coarse sand to loamy sand to silt loam	CL, SC, SC-SM, SM	A-1, A-2, A-4, A-6	0	0	80-100	50-85	35-75	20-55	20-35	3-18
WmB:												
Williamsburg----	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-90	25-35	3-13
	8-18	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-100	25-40	3-18
	18-38	Clay loam, sandy clay loam	CL, SC	A-6, A-7	0	0	90-100	85-100	75-95	45-75	30-45	15-25
	38-63	Gravelly clay loam, sandy clay loam	CL, SC	A-2, A-6, A-7	0	0	80-100	50-95	45-90	25-70	30-50	15-30
	63-80	Gravelly loam, sandy loam, sandy clay loam, gravelly loamy coarse sand	CL, SC, SC-SM, SM	A-1, A-2, A-4, A-6	0	0	80-100	50-85	35-75	20-55	20-35	3-18

Table 22.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
XaA:												
Xenia-----------	0-12	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-35	5-15
	12-34	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-25
	34-58	Clay loam, loam	CL	A-6, A-7	0	0-5	90-100	85-95	70-95	50-80	30-45	10-25
	58-80	Loam	CL, CL-ML	A-4, A-6	0	0-5	90-95	85-95	65-95	50-75	20-30	5-15
XaB:												
Xenia-----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-35	5-15
	8-34	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-25
	34-55	Clay loam, loam	CL	A-6, A-7	0	0-5	90-100	85-95	70-95	50-80	30-45	10-25
	55-80	Loam	CL, CL-ML	A-4, A-6	0	0-5	90-95	85-95	65-95	50-75	20-30	5-15
XaB2:												
Xenia-----------	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-35	5-15
	7-28	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-25
	28-56	Clay loam, loam	CL	A-6, A-7	0	0-5	90-100	85-95	70-95	50-80	30-45	10-25
	56-80	Loam	CL, CL-ML	A-4, A-6	0	0-5	90-95	85-95	65-95	50-75	20-30	5-15

Table 23.—Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
BhA:										
Birkbeck--------	0-10	15-27	1.30-1.50	0.60-2.00	0.22-0.25	Low	.37	.37	5	6
	10-13	15-27	1.35-1.55	0.60-2.00	0.21-0.24	Low	.37	.37		
	13-57	25-35	1.35-1.55	0.60-2.00	0.14-0.24	Moderate	.37	.37		
	57-67	15-35	1.35-1.60	0.20-0.60	0.10-0.18	Low	.37	.43		
	67-80	15-35	1.55-1.90	0.20-0.60	0.05-0.19	Low	.37	.43		
BhB:										
Birkbeck--------	0-10	15-27	1.30-1.50	0.60-2.00	0.22-0.25	Low	.37	.37	5	6
	10-52	25-35	1.35-1.55	0.60-2.00	0.14-0.24	Moderate	.37	.37		
	52-65	15-35	1.35-1.60	0.20-0.60	0.10-0.18	Low	.37	.43		
	65-80	15-35	1.55-1.90	0.20-0.60	0.05-0.19	Low	.37	.43		
BmA:										
Blanchester-----	0-9	27-32	1.35-1.55	0.20-0.60	0.21-0.23	Low	.37	.37	5	6
	9-37	25-35	1.45-1.65	0.06-0.20	0.14-0.22	Moderate	.37	.37		
	37-80	27-40	1.50-1.80	0.06-0.20	0.07-0.18	High	.37	.43		
CaD2:										
Casco-----------	0-6	10-20	1.35-1.55	0.60-2.00	0.19-0.24	Low	.32	.32	3	5
	6-23	10-35	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	.32	.32		
	23-80	0-6	1.30-1.70	6.00-20.00	0.02-0.04	Low	.10	.10		
CaE2:										
Casco-----------	0-5	10-20	1.35-1.55	0.60-2.00	0.19-0.24	Low	.32	.32	3	5
	5-21	10-35	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	.32	.32		
	21-80	0-6	1.30-1.70	6.00-20.00	0.02-0.04	Low	.10	.10		
CbB:										
Celina----------	0-10	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	10-28	10-50	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	28-80	20-35	1.60-1.82	0.01-0.06	0.06-0.10	Low	.37	.49		
CbB2:										
Celina----------	0-6	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	6-25	10-50	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	25-80	20-35	1.60-1.82	0.01-0.06	0.06-0.10	Low	.37	.49		
CcA:										
Celina----------	0-10	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	10-36	10-50	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	36-80	20-35	1.60-1.82	0.01-0.06	0.06-0.10	Low	.37	.49		
Crosby----------	0-10	10-24	1.30-1.60	0.60-2.00	0.18-0.24	Low	.43	.43	4	5
	10-28	35-45	1.45-1.65	0.60-2.00	0.11-0.16	Moderate	.28	.32		
	28-32	10-30	1.55-1.75	0.06-0.20	0.04-0.12	Low	.28	.37		
	32-80	10-25	1.75-1.95	0.01-0.06	0.02-0.04	Low	.32	.43		

Table 23.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
CeB:										
Celina----------	0-12	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	12-28	10-50	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	28-80	20-35	1.60-1.82	0.01-0.06	0.06-0.10	Low	.37	.49		
Losantville-----	0-8	18-30	1.30-1.55	0.20-0.60	0.18-0.24	Low	.43	.43	3	6
	8-18	35-45	1.50-1.70	0.20-0.60	0.07-0.14	Moderate	.28	.32		
	18-80	18-26	1.70-2.00	0.01-0.06	0.02-0.04	Low	.37	.49		
CeB2:										
Celina----------	0-8	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	8-23	10-50	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	23-80	20-35	1.60-1.82	0.01-0.06	0.06-0.10	Low	.37	.49		
Losantville-----	0-5	18-30	1.30-1.55	0.20-0.60	0.18-0.24	Low	.43	.43	3	6
	5-18	35-45	1.50-1.70	0.20-0.60	0.07-0.14	Moderate	.28	.32		
	18-80	18-26	1.70-2.00	0.01-0.06	0.02-0.04	Low	.37	.49		
CmA:										
Clermont--------	0-9	15-25	1.30-1.50	0.20-0.60	0.22-0.24	Low	.43	.43	5	6
	9-14	15-25	1.35-1.55	0.06-0.20	0.20-0.22	Low	.43	.43		
	14-22	20-35	1.45-1.65	0.01-0.06	0.18-0.22	Moderate	.43	.43		
	22-56	30-40	1.50-1.70	0.01-0.06	0.15-0.20	Moderate	.37	.37		
	56-80	30-45	1.50-1.70	0.01-0.06	0.10-0.18	Moderate	.37	.37		
CpA:										
Coblen----------	0-17	18-27	1.20-1.45	0.60-2.00	0.20-0.24	Low	.28	.28	5	6
	17-41	10-27	1.20-1.50	0.60-2.00	0.14-0.18	Low	.32	.37		
	41-49	5-20	1.20-1.60	0.60-6.00	0.11-0.15	Low	.32	.37		
	49-80	10-27	1.20-1.60	0.60-6.00	0.08-0.15	Low	.32	.49		
CrB:										
Corwin----------	0-12	15-26	1.30-1.60	0.60-2.00	0.18-0.24	Low	.28	.28	5	6
	12-22	20-40	1.50-1.70	0.60-2.00	0.11-0.16	Moderate	.28	.32		
	22-26	20-50	1.50-1.70	0.60-2.00	0.11-0.16	Moderate	.32	.37		
	26-36	27-30	1.70-1.90	0.06-0.20	0.04-0.12	Low	.37	.43		
	36-80	10-27	1.75-1.95	0.01-0.06	0.02-0.04	Low	.37	.43		
CtA:										
Crosby----------	0-10	10-24	1.30-1.60	0.60-2.00	0.18-0.24	Low	.43	.43	4	5
	10-28	35-45	1.45-1.65	0.60-2.00	0.11-0.16	Moderate	.28	.32		
	28-34	12-30	1.55-1.75	0.06-0.20	0.04-0.12	Low	.28	.37		
	34-80	15-27	1.75-1.95	0.00-0.06	0.02-0.04	Low	.32	.43		
Celina----------	0-10	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	10-24	10-50	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	24-80	20-35	1.60-1.82	0.00-0.06	0.06-0.10	Low	.37	.49		
CtB:										
Crosby----------	0-8	10-24	1.30-1.60	0.60-2.00	0.18-0.24	Low	.43	.43	4	5
	8-28	35-45	1.45-1.65	0.60-2.00	0.11-0.16	Moderate	.28	.32		
	28-35	12-30	1.55-1.75	0.06-0.20	0.04-0.12	Low	.28	.37		
	35-80	10-25	1.75-1.95	0.00-0.06	0.02-0.04	Low	.32	.43		
Celina----------	0-8	14-26	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	8-26	10-50	1.45-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	26-80	20-35	1.60-1.82	0.00-0.06	0.06-0.10	Low	.37	.49		

Table 23.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors			Wind erodi- bility group
							Kw	Kf	T	
	In	Pct	g/cc	In/hr	In/in					
CuC2:										
Crouse----------	0-10	20-27	1.25-1.45	0.60-2.00	0.18-0.24	Low	.37	.37	5	6
	10-44	20-40	1.40-1.70	0.60-2.00	0.15-0.22	Moderate	.37	.43		
	44-80	20-35	1.45-1.70	0.60-2.00	0.08-0.12	Low	.37	.49		
Miamian---------	0-8	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	8-15	25-35	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	15-40	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	40-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
CuD2:										
Crouse----------	0-10	20-27	1.25-1.45	0.60-2.00	0.18-0.24	Low	.37	.37	5	6
	10-68	20-40	1.40-1.70	0.60-2.00	0.15-0.22	Moderate	.37	.43		
	68-80	20-35	1.45-1.70	0.60-2.00	0.08-0.12	Low	.37	.49		
Miamian---------	0-4	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	4-12	25-35	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	12-36	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	36-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
DhA:										
Dunham----------	0-19	20-27	1.15-1.35	0.60-2.00	0.22-0.25	Low	.28	.28	4	6
	19-44	23-35	1.30-1.50	0.60-2.00	0.18-0.21	Moderate	.37	.37		
	44-50	10-30	1.35-1.60	0.60-2.00	0.15-0.20	Moderate	.32	.32		
	50-80	1-5	1.60-1.85	20.00-99.90	0.02-0.04	Low	.05	.05		
DuA:										
Dunham----------	0-16	27-35	1.10-1.30	0.60-2.00	0.21-0.23	Moderate	.24	.24	4	6
	16-34	23-35	1.30-1.50	0.60-2.00	0.18-0.21	Moderate	.37	.37		
	34-52	10-30	1.35-1.60	0.60-2.00	0.15-0.20	Moderate	.32	.32		
	52-80	1-10	1.60-1.85	20.00-99.90	0.02-0.04	Low	.05	.05		
EgB:										
Eldean----------	0-12	15-25	1.30-1.50	0.60-2.00	0.18-0.22	Low	.37	.43	4	6
	12-27	35-48	1.40-1.60	0.60-2.00	0.08-0.14	Moderate	.37	.49		
	27-30	15-35	1.30-1.60	0.60-2.00	0.07-0.14	Low	.37	.64		
	30-80	2-8	1.55-1.70	6.00-20.00	0.01-0.04	Low	.10	.43		
EkC2:										
Eldean----------	0-3	15-27	1.30-1.50	0.60-2.00	0.15-0.18	Low	.28	.49	4	6
	3-16	35-48	1.40-1.60	0.60-2.00	0.08-0.14	Moderate	.37	.49		
	16-22	15-35	1.30-1.60	0.60-2.00	0.07-0.14	Low	.37	.64		
	22-80	2-8	1.55-1.70	6.00-20.00	0.01-0.04	Low	.10	.43		
FgA:										
Fincastle-------	0-13	11-22	1.40-1.55	0.60-2.00	0.22-0.24	Low	.37	.37	5	5
	13-27	23-35	1.45-1.65	0.60-2.00	0.18-0.20	Moderate	.37	.37		
	27-50	25-35	1.45-1.65	0.20-0.60	0.15-0.19	Moderate	.37	.37		
	50-80	20-26	1.55-1.90	0.01-0.06	0.05-0.19	Low	.37	.43		
FgB:										
Fincastle-------	0-8	11-22	1.40-1.55	0.60-2.00	0.22-0.24	Low	.37	.37	5	5
	8-32	23-35	1.45-1.65	0.60-2.00	0.18-0.20	Moderate	.37	.37		
	32-41	25-35	1.45-1.65	0.20-0.60	0.15-0.19	Moderate	.37	.37		
	41-80	20-26	1.55-1.90	0.01-0.06	0.05-0.19	Low	.37	.43		

Table 23.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
FnA:										
Fox-------------	0-10	10-17	1.35-1.55	0.60-2.00	0.17-0.24	Low	.37	.37	4	5
	10-32	20-35	1.55-1.65	0.60-2.00	0.10-0.19	Moderate	.32	.32		
	32-80	0-10	1.30-1.70	6.00-20.00	0.02-0.07	Low	.10	.10		
FnB:										
Fox-------------	0-8	10-17	1.35-1.55	0.60-2.00	0.17-0.24	Low	.37	.37	4	5
	8-35	15-35	1.55-1.65	0.60-2.00	0.10-0.19	Moderate	.32	.32		
	35-80	0-10	1.30-1.70	6.00-20.00	0.02-0.07	Low	.10	.10		
FnC2:										
Fox-------------	0-9	10-17	1.35-1.55	0.60-2.00	0.17-0.24	Low	.37	.37	4	5
	9-29	20-35	1.55-1.65	0.60-2.00	0.10-0.19	Moderate	.32	.32		
	29-80	0-10	1.30-1.70	6.00-20.00	0.02-0.07	Low	.10	.10		
HkD2:										
Hickory---------	0-6	15-27	1.20-1.35	0.60-2.00	0.20-0.22	Low	.37	.37	5	6
	6-65	20-35	1.45-1.65	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	65-80	16-30	1.60-1.80	0.60-2.00	0.06-0.10	Low	.37	.49		
HkE2:										
Hickory---------	0-8	15-27	1.20-1.35	0.60-2.00	0.20-0.22	Low	.37	.37	5	6
	8-60	24-35	1.45-1.65	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	60-80	20-35	1.60-1.80	0.60-2.00	0.06-0.10	Low	.37	.49		
HkF2:										
Hickory---------	0-5	15-27	1.20-1.35	0.60-2.00	0.20-0.22	Low	.37	.37	5	6
	5-8	15-25	1.30-1.45	0.60-2.00	0.17-0.19	Low	.37	.37		
	8-53	24-35	1.45-1.65	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	53-80	16-30	1.60-1.80	0.60-2.00	0.06-0.10	Low	.37	.49		
HnE2:										
Hickory---------	0-4	15-27	1.20-1.35	0.60-2.00	0.20-0.22	Low	.37	.37	5	6
	4-48	24-35	1.45-1.65	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	48-80	20-35	1.60-1.80	0.60-2.00	0.06-0.10	Low	.37	.49		
Morrisville-----	0-3	20-27	1.30-1.50	0.60-2.00	0.17-0.19	Low	.37	.37	5	6
	3-15	30-50	1.40-1.60	0.06-0.60	0.07-0.14	Moderate	.32	.37		
	15-47	30-60	1.40-1.55	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	47-54	---	---	0.00-0.00	---	---	---	---		
JrA:										
Jonesboro-------	0-7	10-18	1.30-1.45	0.60-2.00	0.20-0.24	Low	.43	.43	4	5
	7-18	25-35	1.35-1.50	0.60-2.00	0.15-0.18	Moderate	.43	.43		
	18-28	20-35	1.35-1.55	0.06-0.20	0.13-0.19	Moderate	.43	.43		
	28-80	30-60	1.50-1.70	0.06-0.20	0.15-0.18	Moderate	.43	.43		
Rossmoyne-------	0-9	13-27	1.35-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	9-26	22-35	1.40-1.60	0.60-2.00	0.14-0.19	Moderate	.43	.43		
	26-37	24-35	1.70-1.90	0.06-0.60	0.06-0.10	Moderate	.43	.49		
	37-80	20-45	1.60-1.75	0.06-0.60	0.06-0.10	Moderate	.43	.55		

Table 23.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
JrB:										
Jonesboro-------	0-9	10-18	1.30-1.45	0.60-2.00	0.20-0.24	Low	.43	.43	4	5
	9-20	25-35	1.35-1.50	0.60-2.00	0.15-0.18	Moderate	.43	.43		
	20-28	20-35	1.35-1.55	0.06-0.20	0.13-0.19	Moderate	.43	.43		
	28-80	30-60	1.50-1.70	0.06-0.20	0.15-0.18	Moderate	.43	.43		
Rossmoyne-------	0-8	13-27	1.35-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	8-25	22-35	1.40-1.60	0.60-2.00	0.14-0.19	Moderate	.43	.43		
	25-39	24-35	1.70-1.90	0.06-0.60	0.06-0.10	Moderate	.43	.49		
	39-80	20-45	1.60-1.75	0.06-0.60	0.06-0.10	Moderate	.43	.55		
JrC2:										
Jonesboro-------	0-5	10-18	1.30-1.45	0.60-2.00	0.20-0.24	Low	.43	.43	4	5
	5-14	25-35	1.35-1.50	0.60-2.00	0.15-0.18	Moderate	.43	.43		
	14-26	25-40	1.35-1.55	0.06-0.20	0.13-0.19	Moderate	.43	.43		
	26-80	30-60	1.50-1.70	0.06-0.20	0.15-0.18	Moderate	.43	.43		
Rossmoyne-------	0-4	13-27	1.35-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	4-22	22-35	1.40-1.60	0.60-2.00	0.14-0.19	Moderate	.43	.43		
	22-30	24-35	1.70-1.90	0.06-0.60	0.06-0.10	Moderate	.43	.49		
	30-80	20-45	1.60-1.75	0.06-0.60	0.06-0.10	Moderate	.43	.55		
KnA:										
Kokomo----------	0-22	20-27	1.30-1.60	0.60-2.00	0.18-0.24	Low	.28	.28	5	6
	22-54	35-45	1.40-1.70	0.20-0.60	0.12-0.21	Moderate	.28	.32		
	54-80	15-35	1.50-1.75	0.06-0.20	0.08-0.15	Low	.32	.37		
KoA:										
Kokomo----------	0-10	27-35	1.30-1.60	0.60-2.00	0.17-0.19	Moderate	.24	.24	5	6
	10-51	35-45	1.40-1.70	0.20-0.60	0.12-0.21	Moderate	.28	.32		
	51-80	16-25	1.50-1.75	0.06-0.20	0.08-0.15	Low	.32	.37		
LbA:										
Libre-----------	0-7	12-24	1.25-1.40	0.60-2.00	0.22-0.24	Low	.37	.37	5	5
	7-34	15-35	1.30-1.45	0.60-2.00	0.18-0.23	Moderate	.37	.37		
	34-48	15-35	1.70-1.85	0.20-0.60	0.16-0.18	Moderate	.37	.37		
	48-80	20-38	1.30-1.45	0.20-2.00	0.16-0.18	Moderate	.37	.37		
LbB:										
Libre-----------	0-10	12-24	1.25-1.40	0.60-2.00	0.22-0.24	Low	.37	.37	5	5
	10-33	15-35	1.30-1.45	0.60-2.00	0.18-0.23	Moderate	.37	.37		
	33-53	10-35	1.70-1.85	0.20-0.60	0.16-0.18	Moderate	.37	.37		
	53-80	10-40	1.30-1.45	0.20-2.00	0.16-0.18	Moderate	.37	.37		
LbC2:										
Libre-----------	0-7	12-24	1.25-1.40	0.60-2.00	0.22-0.24	Low	.37	.37	5	5
	7-30	15-35	1.30-1.45	0.60-2.00	0.18-0.23	Moderate	.37	.37		
	30-55	10-35	1.70-1.85	0.20-0.60	0.16-0.18	Moderate	.37	.37		
	55-80	10-40	1.30-1.45	0.20-2.00	0.16-0.18	Moderate	.37	.37		
LoC2:										
Loudon----------	0-8	15-27	1.30-1.50	0.60-2.00	0.22-0.24	Low	.43	.43	5	6
	8-17	15-35	1.30-1.60	0.20-0.60	0.18-0.22	Moderate	.43	.43		
	17-55	30-60	1.40-1.65	0.06-0.20	0.10-0.18	Moderate	.32	.37		
	55-68	40-60	1.40-1.75	0.06-0.20	0.08-0.16	Moderate	.32	.37		
	68-80	---	---	0.00-0.20	---	---	---	---		

Table 23.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
LuA:										
Lumberton-------	0-9	14-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	3	6
	9-14	20-30	1.35-1.55	0.60-2.00	0.18-0.23	Moderate	.37	.37		
	14-38	25-35	1.45-1.60	0.60-2.00	0.12-0.18	Moderate	.37	.37		
	38-54	5-15	1.40-1.70	0.60-2.00	0.05-0.15	Low	.24	.28		
	54-58	---	---	0.00-0.00	---	---	---	---		
LuB:										
Lumberton-------	0-8	14-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	3	6
	8-35	25-35	1.45-1.60	0.60-2.00	0.12-0.18	Moderate	.37	.37		
	35-45	5-15	1.40-1.70	0.60-2.00	0.05-0.15	Low	.24	.28		
	45-50	---	---	0.00-0.00	---	---	---	---		
LuC2:										
Lumberton-------	0-4	14-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	3	6
	4-28	25-35	1.45-1.60	0.60-2.00	0.12-0.18	Moderate	.37	.37		
	28-41	5-10	1.40-1.70	0.60-2.00	0.05-0.15	Low	.24	.28		
	41-45	---	---	0.00-0.00	---	---	---	---		
LuD2:										
Lumberton-------	0-3	14-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	3	6
	3-54	25-35	1.45-1.60	0.60-2.00	0.12-0.18	Moderate	.37	.37		
	54-60	---	---	0.00-0.00	---	---	---	---		
LuF2:										
Lumberton-------	0-3	14-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	3	6
	3-8	20-30	1.35-1.55	0.60-2.00	0.18-0.23	Moderate	.37	.37		
	8-34	27-35	1.45-1.60	0.60-2.00	0.12-0.18	Moderate	.37	.37		
	34-40	---	---	0.00-0.00	---	---	---	---		
MhB2:										
Miamian---------	0-9	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	9-12	20-40	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	12-24	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	24-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
MhC2:										
Miamian---------	0-5	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	5-12	20-40	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	12-27	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	27-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
MhD2:										
Miamian---------	0-3	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	3-10	20-40	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	10-22	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	22-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
MnE2:										
Miamian---------	0-4	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	4-14	20-40	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	14-38	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	38-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
Thrifton--------	0-4	20-27	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.32	.37	5	4L
	4-19	22-35	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.32	.37		
	19-80	15-25	1.80-1.95	0.06-0.20	0.06-0.20	Low	.32	.32		

Table 23.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
MnF2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	7-14	20-40	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	14-38	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	38-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
Thrifton--------	0-4	20-27	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.32	.37	5	4L
	4-18	22-35	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.32	.37		
	18-80	15-25	1.80-1.95	0.06-0.20	0.06-0.20	Low	.32	.32		
MoE2:										
Miamian---------	0-8	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	8-14	20-40	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	14-33	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	33-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
Crouse----------	0-8	20-27	1.25-1.45	0.60-2.00	0.18-0.24	Low	.37	.37	5	6
	8-70	25-35	1.40-1.70	0.60-2.00	0.15-0.22	Moderate	.37	.43		
	70-80	20-35	1.45-1.70	0.60-2.00	0.08-0.12	Low	.37	.49		
MoF2:										
Miamian---------	0-6	14-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	6-12	20-40	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	12-29	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	29-80	16-26	1.80-2.00	0.01-0.20	0.06-0.10	Low	.37	.49		
Crouse----------	0-10	20-27	1.25-1.45	0.60-2.00	0.18-0.24	Low	.37	.37	5	6
	10-60	25-35	1.40-1.70	0.60-2.00	0.15-0.22	Moderate	.37	.43		
	60-80	20-35	1.45-1.70	0.60-2.00	0.08-0.12	Low	.37	.49		
MvD2:										
Morrisville-----	0-5	27-37	1.30-1.50	0.60-2.00	0.17-0.19	Low	.37	.37	5	6
	5-12	27-50	1.40-1.60	0.06-0.60	0.07-0.14	Moderate	.32	.37		
	12-45	30-60	1.40-1.55	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	45-50	---	---	0.00-0.20	---	---	---	---		
MvE2:										
Morrisville-----	0-3	27-37	1.30-1.50	0.60-2.00	0.17-0.19	Low	.37	.37	5	6
	3-12	27-50	1.40-1.60	0.06-0.60	0.07-0.14	Moderate	.32	.37		
	12-22	30-60	1.40-1.55	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	22-54	30-60	1.40-1.55	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	54-60	---	---	0.00-0.20	---	---	---	---		
NhC2:										
Nicely----------	0-7	19-25	1.30-1.50	0.60-2.00	0.20-0.22	Low	.37	.37	5	6
	7-18	24-35	1.45-1.65	0.60-2.00	0.15-0.19	Moderate	.32	.32		
	18-80	27-40	1.50-1.70	0.20-0.60	0.11-0.19	Moderate	.28	.32		
OcA:										
Ockley----------	0-9	11-22	1.30-1.60	0.60-2.00	0.16-0.24	Low	.37	.37	4	5
	9-20	10-40	1.40-1.60	0.60-2.00	0.13-0.20	Moderate	.32	.37		
	20-64	10-32	1.40-1.70	2.00-6.00	0.05-0.20	Moderate	.10	.20		
	64-80	2-5	1.60-1.80	20.00-99.90	0.02-0.04	Low	.02	.10		
OcB:										
Ockley----------	0-10	11-22	1.30-1.60	0.60-2.00	0.16-0.24	Low	.37	.37	4	5
	10-41	10-30	1.40-1.60	0.60-2.00	0.13-0.20	Moderate	.32	.37		
	41-66	10-40	1.40-1.70	2.00-6.00	0.05-0.20	Moderate	.10	.20		
	66-80	2-5	1.60-1.80	20.00-99.90	0.02-0.04	Low	.02	.10		

Table 23.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
OdA:										
Ockley----------	0-15	10-20	1.30-1.40	0.60-2.00	0.20-0.24	Low	.37	.37	5	5
	15-35	25-35	1.40-1.65	0.60-2.00	0.15-0.20	Moderate	.37	.37		
	35-58	28-35	1.55-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	58-65	15-25	1.60-1.70	6.00-20.00	0.12-0.15	Moderate	.24	.43		
	65-80	8-15	1.65-1.70	0.06-0.20	0.08-0.13	Low	.24	.28		
OdB:										
Ockley----------	0-10	10-20	1.30-1.40	0.60-2.00	0.20-0.24	Low	.37	.37	5	5
	10-39	25-35	1.40-1.65	0.60-2.00	0.15-0.20	Moderate	.37	.37		
	39-65	15-32	1.55-1.65	6.00-20.00	0.16-0.19	Moderate	.37	.43		
	65-80	8-15	1.65-1.70	0.06-0.20	0.08-0.13	Low	.24	.28		
OdC2:										
Ockley----------	0-10	10-20	1.30-1.40	0.60-2.00	0.20-0.24	Low	.37	.37	5	5
	10-40	25-35	1.40-1.65	0.60-2.00	0.15-0.20	Moderate	.37	.37		
	40-72	15-32	1.55-1.65	6.00-20.00	0.16-0.19	Moderate	.37	.43		
	72-80	8-15	1.65-1.70	0.06-0.20	0.08-0.13	Low	.24	.28		
OeA:										
Odell-----------	0-12	18-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.28	.28	5	6
	12-46	20-50	1.50-1.70	0.60-2.00	0.15-0.19	Moderate	.28	.28		
	46-55	20-35	1.55-1.70	0.60-2.00	0.08-0.15	Low	.37	.43		
	55-80	10-20	1.70-1.90	0.06-0.20	0.05-0.10	Low	.37	.43		
Pg.										
Pits, gravel										
Pk.										
Pits, quarry										
RcA:										
Randolph--------	0-13	16-30	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	2	6
	13-37	27-45	1.40-1.65	0.20-0.60	0.13-0.16	Moderate	.28	.32		
	37-43	---	---	0.00-0.00	---	---	---	---		
ReA:										
Reesville-------	0-8	12-20	1.20-1.45	0.60-2.00	0.17-0.24	Low	.37	.37	5	5
	8-47	25-35	1.30-1.55	0.60-2.00	0.17-0.22	Moderate	.37	.37		
	47-54	20-30	1.30-1.60	0.60-2.00	0.15-0.20	Low	.37	.37		
	54-80	15-35	1.45-1.70	0.20-0.60	0.15-0.18	Low	.37	.43		
ReB:										
Reesville-------	0-8	12-20	1.20-1.45	0.60-2.00	0.17-0.24	Low	.37	.37	5	5
	8-35	25-35	1.30-1.55	0.60-2.00	0.17-0.22	Moderate	.37	.37		
	35-48	20-30	1.30-1.60	0.60-2.00	0.15-0.20	Low	.37	.37		
	48-80	5-25	1.45-1.70	0.20-0.60	0.15-0.18	Low	.37	.43		
RnA:										
Ross------------	0-14	15-27	1.20-1.45	0.60-2.00	0.19-0.24	Low	.32	.32	5	6
	14-31	18-32	1.20-1.50	0.60-2.00	0.16-0.22	Low	.32	.32		
	31-80	5-35	1.35-1.60	0.60-6.00	0.05-0.18	Low	.32	.49		
RoA:										
Ross------------	0-25	15-27	1.20-1.45	0.60-2.00	0.19-0.24	Low	.32	.32	5	6
	25-80	0-10	1.35-1.60	0.60-6.00	0.05-0.18	Low	.32	.49		

Table 23.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
RsA:										
Rossburg--------	0-21	13-27	1.20-1.50	0.60-2.00	0.19-0.24	Low	.37	.37	5	6
	21-45	10-25	1.25-1.60	0.60-2.00	0.15-0.22	Low	.37	.37		
	45-80	5-15	1.30-1.60	2.00-6.00	0.05-0.15	Low	.24	.32		
RuB2:										
Russell---------	0-8	11-25	1.30-1.45	0.60-2.00	0.21-0.24	Low	.37	.37	5	5
	8-26	25-33	1.40-1.60	0.60-2.00	0.18-0.20	Moderate	.37	.37		
	26-49	23-33	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	49-80	14-27	1.80-2.00	0.06-0.20	0.05-0.19	Low	.37	.43		
Xenia-----------	0-6	11-22	1.30-1.50	0.60-2.00	0.22-0.24	Low	.37	.37	5	5
	6-26	27-35	1.45-1.65	0.60-2.00	0.18-0.20	Moderate	.37	.37		
	26-43	24-35	1.45-1.65	0.20-0.60	0.15-0.19	Moderate	.37	.43		
	43-80	12-20	1.70-1.90	0.06-0.20	0.05-0.10	Low	.37	.43		
SaA:										
Sardinia--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	8-66	24-35	1.35-1.60	0.20-0.60	0.18-0.22	Moderate	.37	.37		
	66-80	15-35	1.25-1.55	0.60-2.00	0.12-0.16	Low	.37	.55		
SaB:										
Sardinia--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	8-50	24-35	1.35-1.60	0.20-0.60	0.18-0.22	Moderate	.37	.37		
	50-64	20-40	1.35-1.60	0.60-2.00	0.15-0.18	Moderate	.37	.55		
	64-80	15-35	1.25-1.55	0.60-2.00	0.12-0.16	Low	.37	.55		
ScA:										
Secondcreek-----	0-20	20-27	1.38-1.50	0.60-2.00	0.22-0.24	Low	.32	.32	5	6
	20-42	40-55	1.45-1.65	0.06-0.20	0.11-0.18	High	.37	.37		
	42-57	26-35	1.45-1.65	0.06-0.20	0.11-0.18	High	.37	.37		
	57-80	27-35	1.50-1.70	0.06-0.20	0.15-0.18	Moderate	.43	.43		
SeA:										
Secondcreek-----	0-23	27-35	1.38-1.56	0.20-0.60	0.20-0.23	Moderate	.32	.32	5	6
	23-44	40-55	1.45-1.65	0.06-0.20	0.11-0.18	High	.37	.37		
	44-57	27-35	1.45-1.65	0.06-0.20	0.11-0.18	High	.37	.37		
	57-80	27-35	1.50-1.70	0.06-0.20	0.15-0.18	Moderate	.43	.43		
ShA:										
Shoals----------	0-12	18-30	1.30-1.60	0.60-2.00	0.20-0.24	Low	.24	.24	5	6
	12-38	10-30	1.40-1.70	0.60-2.00	0.15-0.22	Moderate	.32	.32		
	38-80	2-30	1.35-1.65	0.60-2.00	0.05-0.20	Low	.37	.37		
SmA:										
Sligo-----------	0-9	15-25	1.00-1.20	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	9-58	5-20	1.00-1.20	0.60-2.00	0.17-0.22	Low	.17	.17		
	58-80	0-10	1.25-1.55	6.00-20.00	0.02-0.20	Low	.10	.17		
SnA:										
Sloan-----------	0-21	15-30	1.20-1.40	0.60-2.00	0.19-0.24	Low	.28	.28	5	6
	21-48	20-40	1.25-1.55	0.60-2.00	0.17-0.20	Moderate	.32	.32		
	48-68	5-25	1.25-1.55	0.60-2.00	0.19-0.21	Low	.32	.37		
	68-80	0-10	1.20-1.50	0.60-2.00	0.02-0.05	Low	.10	.17		

Table 23.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
SrA:										
Stringley-------	0-6	10-22	1.35-1.45	2.00-6.00	0.20-0.22	Low	.32	.37	5	4L
	6-48	5-18	1.35-1.70	2.00-6.00	0.19-0.21	Low	.24	.28		
	48-80	4-10	1.70-1.80	20.00-99.90	0.02-0.04	Low	.10	.37		
Sligo-----------	0-6	15-25	1.00-1.20	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	6-48	15-25	1.00-1.20	0.60-2.00	0.17-0.22	Low	.17	.17		
	48-80	2-10	1.25-1.55	6.00-20.00	0.02-0.20	Low	.10	.17		
TaA:										
Taggart---------	0-10	12-20	1.30-1.65	0.60-2.00	0.18-0.24	Low	.49	.49	5	5
	10-55	20-35	1.40-1.65	0.60-2.00	0.18-0.20	Low	.37	.43		
	55-80	15-35	1.40-1.60	0.06-0.20	0.13-0.19	Low	.37	.43		
TpA:										
Treaty----------	0-14	18-27	1.30-1.55	0.60-2.00	0.17-0.26	Low	.32	.32	5	6
	14-38	24-35	1.40-1.70	0.60-2.00	0.14-0.21	Moderate	.37	.37		
	38-55	24-35	1.40-1.70	0.60-2.00	0.07-0.21	Moderate	.37	.43		
	55-80	5-25	1.65-1.95	0.20-0.60	0.01-0.15	Low	.43	.49		
TrA:										
Treaty----------	0-16	28-35	1.40-1.70	0.60-2.00	0.17-0.24	Moderate	.32	.32	5	6
	16-32	24-35	1.40-1.70	0.60-2.00	0.14-0.21	Moderate	.37	.37		
	32-63	24-35	1.40-1.70	0.60-2.00	0.07-0.21	Moderate	.37	.43		
	63-80	10-20	1.65-1.95	0.20-0.60	0.01-0.15	Low	.43	.49		
Ud.										
Udorthents										
W.										
Water										
WaC3:										
Wapahani--------	0-3	27-35	1.40-1.70	0.20-0.60	0.13-0.19	Moderate	.32	.32	3	6
	3-18	22-35	1.40-1.70	0.20-0.60	0.07-0.17	Moderate	.32	.37		
	18-80	10-20	1.75-1.95	0.01-0.06	0.01-0.03	Low	.43	.49		
Miamian---------	0-3	27-32	1.35-1.55	0.60-2.00	0.16-0.19	Moderate	.32	.32	4	6
	3-8	25-35	1.40-1.60	0.20-0.60	0.16-0.20	Moderate	.37	.43		
	8-28	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	28-80	16-26	1.80-2.00	0.06-0.20	0.06-0.10	Low	.37	.49		
WaD3:										
Wapahani--------	0-3	27-35	1.40-1.70	0.20-0.60	0.13-0.19	Moderate	.32	.32	3	6
	3-19	22-35	1.40-1.70	0.20-0.60	0.07-0.17	Moderate	.32	.37		
	19-80	10-20	1.75-1.95	0.01-0.06	0.01-0.03	Low	.43	.49		
Miamian---------	0-3	27-32	1.35-1.55	0.60-2.00	0.16-0.19	Moderate	.32	.32	4	6
	3-24	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.43		
	24-80	16-26	1.80-2.00	0.06-0.20	0.06-0.10	Low	.37	.49		

Table 23.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
WcA:										
Westboro--------	0-11	10-18	1.30-1.45	0.60-2.00	0.20-0.24	Low	.43	.43	4	5
	11-27	25-35	1.35-1.50	0.60-2.00	0.18-0.20	Moderate	.43	.43		
	27-37	22-35	1.60-1.75	0.20-0.60	0.15-0.18	Moderate	.43	.43		
	37-80	25-35	1.50-1.70	0.20-0.60	0.15-0.18	Moderate	.43	.43		
Schaffer--------	0-11	10-18	1.30-1.45	0.60-2.00	0.20-0.24	Low	.49	.49	4	5
	11-26	24-30	1.40-1.60	0.06-0.60	0.18-0.22	Moderate	.49	.49		
	26-36	25-35	1.80-2.00	0.00-0.01	0.09-0.11	Low	.55	.55		
	36-80	25-40	1.40-1.60	0.06-0.20	0.05-0.06	Moderate	.37	.43		
WcB:										
Westboro--------	0-8	10-18	1.30-1.45	0.60-2.00	0.20-0.24	Low	.43	.43	4	5
	8-21	27-35	1.35-1.50	0.60-2.00	0.18-0.20	Moderate	.43	.43		
	21-30	22-35	1.60-1.75	0.20-0.60	0.15-0.18	Moderate	.43	.43		
	30-80	27-35	1.50-1.70	0.20-0.60	0.15-0.18	Moderate	.43	.43		
Schaffer--------	0-8	10-18	1.30-1.45	0.60-2.00	0.20-0.24	Low	.49	.49	4	5
	8-28	24-30	1.40-1.60	0.06-0.60	0.18-0.22	Moderate	.49	.49		
	28-38	22-30	1.80-2.00	0.00-0.01	0.09-0.11	Low	.55	.55		
	38-80	25-40	1.40-1.60	0.06-0.20	0.05-0.06	Moderate	.37	.43		
WmA:										
Williamsburg----	0-10	15-25	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	10-15	20-30	1.30-1.55	0.60-2.00	0.17-0.22	Low	.37	.37		
	15-52	15-35	1.35-1.60	0.60-2.00	0.13-0.18	Moderate	.37	.37		
	52-65	20-40	1.25-1.55	0.60-2.00	0.12-0.14	Moderate	.24	.37		
	65-80	5-25	1.25-1.55	0.60-2.00	0.12-0.14	Low	.24	.43		
WmB:										
Williamsburg----	0-8	15-25	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	8-18	20-30	1.30-1.55	0.60-2.00	0.17-0.22	Low	.37	.37		
	18-38	25-35	1.35-1.60	0.60-2.00	0.13-0.18	Moderate	.37	.37		
	38-63	20-40	1.25-1.55	0.60-2.00	0.12-0.14	Moderate	.24	.37		
	63-80	5-25	1.25-1.55	0.60-2.00	0.12-0.14	Low	.24	.43		
XaA:										
Xenia-----------	0-12	11-22	1.30-1.50	0.60-2.00	0.22-0.24	Low	.37	.37	5	5
	12-34	27-35	1.45-1.65	0.60-2.00	0.18-0.20	Moderate	.37	.37		
	34-58	24-35	1.45-1.65	0.20-0.60	0.15-0.19	Moderate	.37	.43		
	58-80	12-20	1.70-1.90	0.06-0.20	0.05-0.10	Low	.37	.43		
XaB:										
Xenia-----------	0-8	11-22	1.30-1.50	0.60-2.00	0.22-0.24	Low	.37	.37	5	5
	8-34	27-35	1.45-1.65	0.60-2.00	0.18-0.20	Moderate	.37	.37		
	34-55	24-35	1.45-1.65	0.20-0.60	0.15-0.19	Moderate	.37	.43		
	55-80	12-20	1.70-1.90	0.06-0.20	0.05-0.10	Low	.37	.43		
XaB2:										
Xenia-----------	0-7	11-22	1.30-1.50	0.60-2.00	0.22-0.24	Low	.37	.37	5	5
	7-28	27-35	1.45-1.65	0.60-2.00	0.18-0.20	Moderate	.37	.37		
	28-56	24-35	1.45-1.65	0.20-0.60	0.15-0.19	Moderate	.37	.43		
	56-80	12-20	1.70-1.90	0.06-0.20	0.05-0.10	Low	.37	.43		

Table 24.—Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
BhA:					
Birkbeck--------	0-10	5.1-7.3	1.0-3.0	11-23	0
	10-13	4.5-7.3	0.5-1.0	10-19	0
	13-57	4.5-7.3	0.5-1.0	16-23	0
	57-67	5.6-7.8	0.0-0.5	12-19	0-5
	67-80	6.6-8.4	0.0-0.5	10-19	0-20
BhB:					
Birkbeck--------	0-10	5.1-7.3	1.0-3.0	11-23	0
	10-52	4.5-7.3	0.5-1.0	16-23	0
	52-65	5.6-7.8	0.0-0.5	12-19	0-5
	65-80	6.6-8.4	0.0-0.5	10-19	0-20
BmA:					
Blanchester-----	0-9	4.5-6.5	1.0-3.0	13-25	0
	9-37	4.5-7.3	0.5-1.0	10-25	0
	37-80	6.6-8.4	0.1-0.3	15-30	0-10
CaD2:					
Casco-----------	0-6	5.6-7.3	1.0-3.0	4.0-20	0
	6-23	5.6-7.8	0.0-0.5	4.0-30	0-3
	23-80	7.4-8.4	0.0-0.5	0.0-3.0	1-25
CaE2:					
Casco-----------	0-5	5.6-7.3	1.0-3.0	4.0-20	0
	5-21	5.6-7.8	0.0-0.5	4.0-30	0-3
	21-80	7.4-8.4	0.0-0.5	0.0-3.0	1-25
CbB:					
Celina----------	0-10	5.6-7.3	1.0-3.0	9.0-19	0
	10-28	4.5-7.8	0.5-1.0	18-32	0-15
	28-80	7.4-8.4	0.3-0.5	8.0-14	25-45
CbB2:					
Celina----------	0-6	5.6-7.3	0.5-2.0	8.0-16	0
	6-25	4.5-7.8	0.5-1.0	18-32	0-15
	25-80	7.4-8.4	0.3-0.5	8.0-14	25-45
CcA:					
Celina----------	0-10	5.6-7.3	1.0-3.0	9.0-19	0
	10-36	4.5-7.8	0.5-1.0	18-32	0-15
	36-80	7.4-8.4	0.3-0.5	8.0-14	25-45
Crosby----------	0-10	5.1-7.3	1.0-3.0	6.0-20	0
	10-28	5.1-7.3	0.5-1.0	15-29	0
	28-32	7.4-8.4	0.0-0.5	5.0-17	5-40
	32-80	7.4-8.4	0.0-0.5	4.0-16	20-50
CeB:					
Celina----------	0-12	5.6-7.3	1.0-3.0	9.0-19	0
	12-28	4.5-7.8	0.5-1.0	18-32	0-15
	28-80	7.4-8.4	0.3-0.5	8.0-14	25-45
Losantville-----	0-8	5.6-7.3	1.0-2.0	9.0-21	0
	8-18	6.1-7.8	0.0-0.5	14-28	0-5
	18-80	7.4-8.4	0.0-0.5	7.0-16	25-45

Table 24.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
CeB2:					
Celina----------	0-8	5.6-7.3	1.0-3.0	9.0-19	0
	8-23	4.5-7.8	0.5-1.0	18-32	0-15
	23-80	7.4-8.4	0.3-0.5	8.0-14	25-45
Losantville-----	0-5	5.6-7.3	1.0-2.0	9.0-21	0
	5-18	6.1-7.8	0.0-0.5	14-28	0-5
	18-80	7.4-8.4	0.0-0.5	7.0-16	25-45
CmA:					
Clermont--------	0-9	4.5-5.5	1.0-3.0	6.0-12	0
	9-14	3.5-5.5	0.5-1.0	10-20	0
	14-22	3.5-5.5	0.4-0.6	15-20	0
	22-56	4.5-7.3	0.2-0.4	20-35	0
	56-80	4.5-7.3	0.1-0.3	20-35	0-10
CpA:					
Coblen----------	0-17	6.6-7.8	3.0-6.0	13-28	0
	17-41	6.6-8.4	0.5-1.0	7.0-17	0
	41-49	7.8-8.4	0.5-1.0	4.0-18	0-10
	49-80	7.8-8.4	0.3-0.5	2.0-18	0-20
CrB:					
Corwin----------	0-12	5.1-7.3	2.0-4.0	10-24	0
	12-22	5.1-6.5	0.5-1.0	11-23	0
	22-26	5.6-7.8	0.5-1.0	12-23	0
	26-36	7.4-8.4	0.0-1.0	4.0-17	5-30
	36-80	7.4-8.4	0.0-0.5	4.0-14	20-30
CtA:					
Crosby----------	0-10	5.1-7.3	1.0-3.0	6.0-20	0
	10-28	5.1-7.3	0.5-1.0	15-29	0
	28-34	7.4-8.4	0.0-0.5	5.0-17	5-40
	34-80	7.4-8.4	0.0-0.5	4.0-16	20-50
Celina----------	0-10	5.6-7.3	1.0-3.0	9.0-19	0
	10-24	4.5-7.8	0.5-1.0	18-32	0-15
	24-80	7.4-8.4	0.3-0.5	8.0-14	25-45
CtB:					
Crosby----------	0-8	5.1-7.3	1.0-3.0	6.0-20	0
	8-28	5.1-7.3	0.5-1.0	15-29	0
	28-35	7.4-8.4	0.0-0.5	5.0-17	5-40
	35-80	7.4-8.4	0.0-0.5	4.0-16	20-50
Celina----------	0-8	5.6-7.3	1.0-3.0	9.0-19	0
	8-26	4.5-7.8	0.5-1.0	18-32	0-15
	26-80	7.4-8.4	0.3-0.5	8.0-14	25-45
CuC2:					
Crouse----------	0-10	5.6-7.3	0.5-2.0	12-15	0
	10-44	5.6-7.8	0.1-0.3	14-20	0
	44-80	7.4-8.4	0.0-0.1	10-18	5-20
Miamian---------	0-8	5.6-7.3	1.0-3.0	10-18	0
	8-15	5.1-7.3	0.5-1.0	12-22	0
	15-40	5.1-7.8	0.3-1.0	17-28	0-15
	40-80	7.4-8.4	0.1-0.5	7.0-16	25-50

Table 24.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
CuD2:					
Crouse----------	0-10	5.6-7.3	0.5-2.0	12-15	0
	10-68	5.6-7.8	0.1-0.3	14-20	0
	68-80	7.4-8.4	0.0-0.1	10-18	5-20
Miamian---------	0-4	5.6-7.3	1.0-3.0	10-18	0
	4-12	5.1-7.3	0.5-1.0	12-22	0
	12-36	5.1-7.8	0.3-1.0	17-28	0-15
	36-80	7.4-8.4	0.1-0.5	7.0-16	25-50
DhA:					
Dunham----------	0-19	5.6-7.3	5.0-6.0	22-29	0
	19-44	5.6-7.3	0.5-2.0	16-26	0
	44-50	6.1-7.8	0.0-0.5	6.0-19	0-20
	50-80	7.4-8.4	0.0-0.5	1.0-7.0	15-40
DuA:					
Dunham----------	0-16	5.6-7.3	5.0-6.0	25-34	0
	16-34	5.6-7.3	0.5-2.0	16-26	0
	34-52	6.1-7.8	0.0-0.5	6.0-19	0-20
	52-80	7.4-8.4	0.0-0.5	1.0-7.0	15-40
EgB:					
Eldean----------	0-12	5.6-7.3	1.0-3.0	8.0-21	0
	12-27	5.6-7.3	0.5-1.0	20-30	0
	27-30	6.6-7.8	0.5-1.0	20-30	10-50
	30-80	7.4-8.4	0.5-1.0	1.0-8.0	40-65
EkC2:					
Eldean----------	0-3	5.6-7.3	1.0-3.0	8.0-22	0
	3-16	5.6-7.3	0.3-1.0	20-30	0
	16-22	6.6-7.8	0.1-0.5	20-30	10-50
	22-80	7.4-8.4	0.1-0.3	1.0-8.0	40-65
FgA:					
Fincastle-------	0-13	5.1-7.3	1.0-3.0	6.0-20	0
	13-27	4.5-6.5	0.0-0.5	9.0-23	0
	27-50	5.1-7.8	0.0-0.5	10-24	0-25
	50-80	7.4-8.4	0.0-0.5	8.0-16	15-35
FgB:					
Fincastle-------	0-8	5.1-7.3	1.0-3.0	6.0-20	0
	8-32	4.5-6.5	0.0-0.5	9.0-23	0
	32-41	5.1-7.8	0.0-0.5	10-24	0-25
	41-80	7.4-8.4	0.0-0.5	8.0-16	15-35
FnA:					
Fox-------------	0-10	5.1-7.3	1.0-3.0	4.0-20	0
	10-32	5.6-7.8	0.0-0.5	4.0-30	0-45
	32-80	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FnB:					
Fox-------------	0-8	5.1-7.3	1.0-3.0	4.0-20	0
	8-35	5.6-7.8	0.0-0.5	4.0-30	0-45
	35-80	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FnC2:					
Fox-------------	0-9	5.1-7.3	0.5-2.0	2.0-18	0
	9-29	5.6-7.8	0.0-0.5	4.0-30	0-45
	29-80	7.4-8.4	0.0-0.5	0.0-3.0	5-45

Table 24.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
HkD2:					
Hickory---------	0-6	4.5-7.3	1.0-2.0	11-20	0
	6-65	4.5-7.3	0.0-0.5	16-22	0
	65-80	5.6-8.4	0.1-0.5	7.0-16	25-50
HkE2:					
Hickory---------	0-8	4.5-7.3	1.0-2.0	11-20	0
	8-60	4.5-7.3	0.0-0.5	16-22	0
	60-80	5.6-8.4	0.1-0.5	7.0-16	25-50
HkF2:					
Hickory---------	0-5	4.5-7.3	1.0-2.0	11-20	0
	5-8	4.5-6.0	0.5-1.0	9.0-18	0
	8-53	4.5-7.3	0.0-0.5	16-22	0
	53-80	5.6-8.4	0.1-0.5	7.0-16	25-50
HnE2:					
Hickory---------	0-4	4.5-7.3	1.0-2.0	11-20	0
	4-48	4.5-7.3	0.0-0.5	16-22	0
	48-80	5.6-8.4	0.1-0.5	7.0-16	25-50
Morrisville-----	0-3	5.6-7.3	1.0-3.0	8.0-22	0
	3-15	5.1-7.3	0.3-1.0	14-30	0
	15-47	7.9-8.4	0.1-0.3	16-30	1-25
	47-54	---	---	---	---
JrA:					
Jonesboro-------	0-7	6.1-7.3	1.0-2.0	12-16	0
	7-18	4.5-6.5	0.0-0.5	11-20	0
	18-28	5.1-5.5	0.0-0.5	15-21	0
	28-80	5.6-7.8	0.0-0.5	17-26	0-2
Rossmoyne-------	0-9	4.5-7.3	1.0-3.0	9.0-22	0
	9-26	4.5-5.5	0.4-1.0	9.0-21	0
	26-37	4.5-5.5	0.1-0.4	10-21	0
	37-80	7.4-8.4	0.1-0.3	7.0-27	0-40
JrB:					
Jonesboro-------	0-9	6.1-7.3	1.0-2.0	12-16	0
	9-20	4.5-6.5	0.0-0.5	11-20	0
	20-28	5.1-5.5	0.0-0.5	15-21	0
	28-80	5.6-7.8	0.0-0.5	17-26	0-2
Rossmoyne-------	0-8	4.5-7.3	1.0-3.0	9.0-22	0
	8-25	4.5-5.5	0.4-1.0	9.0-21	0
	25-39	4.5-5.5	0.1-0.4	10-21	0
	39-80	7.4-8.4	0.1-0.3	7.0-27	0-40
JrC2:					
Jonesboro-------	0-5	6.1-7.3	0.8-1.8	10-14	0
	5-14	4.5-6.5	0.0-0.5	11-20	0
	14-26	5.1-5.5	0.0-0.5	15-21	0
	26-80	5.6-7.8	0.0-0.5	17-26	0-2
Rossmoyne-------	0-4	4.5-7.3	0.8-2.8	8.0-20	0
	4-22	4.5-5.5	0.4-1.0	9.0-21	0
	22-30	4.5-5.5	0.1-0.4	10-21	0
	30-80	7.4-8.4	0.1-0.3	7.0-27	0-40

Table 24.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
KnA:					
Kokomo----------	0-22	5.1-7.3	3.0-6.0	14-29	0
	22-54	5.6-7.8	1.0-2.0	16-28	0-3
	54-80	7.4-8.4	0.0-1.0	6.0-17	15-35
KoA:					
Kokomo----------	0-10	5.1-7.3	3.0-6.0	16-33	0
	10-51	5.6-7.8	1.0-2.0	16-28	0-3
	51-80	7.4-8.4	0.0-1.0	6.0-17	15-35
LbA:					
Libre-----------	0-7	4.5-6.5	0.5-2.0	8.0-12	0
	7-34	4.5-6.0	0.1-0.3	10-16	0
	34-48	4.5-6.0	0.1-0.1	6.0-14	0
	48-80	4.5-6.0	0.0-0.1	8.0-18	0
LbB:					
Libre-----------	0-10	4.5-6.5	0.5-2.0	8.0-12	0
	10-33	4.5-6.0	0.1-0.3	10-16	0
	33-53	4.5-6.0	0.1-0.1	6.0-14	0
	53-80	4.5-6.0	0.0-0.1	8.0-18	0
LbC2:					
Libre-----------	0-7	4.5-6.5	0.3-1.5	6.0-10	0
	7-30	4.5-6.0	0.1-0.3	10-16	0
	30-55	4.5-6.0	0.1-0.1	6.0-14	0
	55-80	4.5-6.0	0.0-0.1	8.0-18	0
LoC2:					
Loudon----------	0-8	5.1-6.0	1.0-3.0	10-20	0
	8-17	4.5-6.0	0.3-1.0	12-20	0
	17-55	4.5-6.0	0.1-0.5	17-30	0-10
	55-68	6.6-8.4	0.1-0.3	17-32	5-30
	68-80	---	---	---	---
LuA:					
Lumberton-------	0-9	6.1-7.3	1.0-3.0	8.0-14	0
	9-14	5.6-7.3	0.0-0.5	12-18	0
	14-38	5.6-7.3	0.0-0.5	14-21	0
	38-54	7.4-8.4	0.0-0.1	3.0-5.0	75-95
	54-58	---	---	---	---
LuB:					
Lumberton-------	0-8	6.1-7.3	1.0-3.0	8.0-14	0
	8-35	5.6-7.3	0.0-0.5	14-21	0
	35-45	7.4-8.4	0.0-0.1	3.0-5.0	75-95
	45-50	---	---	---	---
LuC2:					
Lumberton-------	0-4	6.1-7.3	0.5-2.0	6.0-12	0
	4-28	5.6-7.3	0.0-0.5	14-21	0
	28-41	7.4-8.4	0.0-0.1	3.0-5.0	75-95
	41-45	---	---	---	---
LuD2:					
Lumberton-------	0-3	6.1-7.3	0.5-2.0	6.0-12	0
	3-54	5.6-7.3	0.0-0.5	14-21	0
	54-60	---	---	---	---

Table 24.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
LuF2:					
Lumberton-------	0-3	6.1-7.3	0.5-2.0	6.0-12	0
	3-8	5.6-7.3	0.0-0.5	12-18	0
	8-34	5.6-7.3	0.0-0.5	14-21	0
	34-40	---	---	---	---
MhB2:					
Miamian---------	0-9	5.6-7.3	1.0-3.0	10-18	0
	9-12	5.1-7.3	0.5-1.0	12-22	0
	12-24	5.1-7.8	0.3-1.0	17-28	0-15
	24-80	7.4-8.4	0.1-0.5	7.0-16	25-50
MhC2:					
Miamian---------	0-5	5.6-7.3	1.0-3.0	10-18	0
	5-12	5.1-7.3	0.5-1.0	12-22	0
	12-27	5.1-7.8	0.3-1.0	17-28	0-15
	27-80	7.4-8.4	0.1-0.5	7.0-16	25-50
MhD2:					
Miamian---------	0-3	5.6-7.3	1.0-3.0	10-18	0
	3-10	5.1-7.3	0.5-1.0	12-22	0
	10-22	5.1-7.8	0.3-1.0	17-28	0-15
	22-80	7.4-8.4	0.1-0.5	7.0-16	25-50
MnE2:					
Miamian---------	0-4	5.6-7.3	1.0-3.0	10-18	0
	4-14	5.1-7.3	0.5-1.0	12-22	0
	14-38	5.1-7.8	0.3-1.0	17-28	0-15
	38-80	7.4-8.4	0.1-0.5	7.0-16	25-50
Thrifton--------	0-4	7.4-8.4	0.5-2.0	14-20	2-10
	4-19	7.4-8.4	0.1-0.5	12-22	10-35
	19-80	7.4-8.4	0.0-0.1	7.0-16	25-45
MnF2:					
Miamian---------	0-7	5.6-7.3	1.0-3.0	10-18	0
	7-14	5.1-7.3	0.5-1.0	12-22	0
	14-38	5.1-7.8	0.3-1.0	17-28	0-15
	38-80	7.4-8.4	0.1-0.5	7.0-16	25-50
Thrifton--------	0-4	7.4-8.4	0.5-2.0	14-20	2-10
	4-18	7.4-8.4	0.1-0.5	12-22	10-35
	18-80	7.4-8.4	0.0-0.1	7.0-16	25-45
MoE2:					
Miamian---------	0-8	5.6-7.3	1.0-3.0	10-18	0
	8-14	5.1-7.3	0.5-1.0	12-22	0
	14-33	5.1-7.8	0.3-1.0	17-28	0-15
	33-80	7.4-8.4	0.1-0.5	7.0-16	25-50
Crouse----------	0-8	5.6-7.3	0.5-2.0	12-15	0
	8-70	5.6-7.8	0.1-0.3	14-20	0
	70-80	7.4-8.4	0.0-0.1	10-18	5-20

Table 24.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
MoF2:					
Miamian----------	0-6	5.6-7.3	1.0-3.0	10-18	0
	6-12	5.1-7.3	0.5-1.0	12-22	0
	12-29	5.1-7.8	0.3-1.0	17-28	0-15
	29-80	7.4-8.4	0.1-0.5	7.0-16	25-50
Crouse-----------	0-10	5.6-7.3	0.5-2.0	12-15	0
	10-60	5.6-7.8	0.1-0.3	14-20	0
	60-80	7.4-8.4	0.0-0.1	10-18	5-20
MvD2:					
Morrisville------	0-5	5.6-7.3	1.0-3.0	8.0-22	0
	5-12	5.1-7.3	0.3-1.0	14-30	0
	12-45	7.9-8.4	0.1-0.3	16-30	1-25
	45-50	---	---	---	---
MvE2:					
Morrisville------	0-3	5.6-7.3	1.0-3.0	8.0-22	0
	3-12	5.1-7.3	0.3-1.0	14-30	0
	12-22	6.6-8.4	0.1-0.3	16-30	0
	22-54	7.9-8.4	0.1-0.3	16-30	1-25
	54-60	---	---	---	---
NhC2:					
Nicely-----------	0-7	5.1-7.3	1.0-2.0	14-19	0
	7-18	4.5-7.3	0.0-0.5	16-22	0
	18-80	4.5-5.5	0.0-0.5	12-24	0
OcA:					
Ockley-----------	0-9	5.6-7.3	1.0-3.0	3.0-15	0
	9-20	4.5-6.5	0.5-1.0	5.0-15	0
	20-64	5.1-7.3	0.5-1.0	2.0-15	0
	64-80	7.4-8.4	0.0-0.5	1.0-3.0	20-50
OcB:					
Ockley-----------	0-10	5.6-7.3	1.0-3.0	3.0-15	0
	10-41	4.5-6.5	0.5-1.0	5.0-15	0
	41-66	5.1-7.3	0.5-1.0	2.0-15	0
	66-80	7.4-8.4	0.0-0.5	1.0-3.0	20-50
OdA:					
Ockley-----------	0-15	5.6-7.3	1.0-2.0	6.0-16	0
	15-35	4.5-6.5	0.0-1.0	10-22	0
	35-58	5.1-6.0	0.0-0.5	6.0-18	0
	58-65	6.1-7.8	0.0-0.2	6.0-17	0-10
	65-80	7.4-8.4	0.0-0.5	3.0-9.0	5-30
OdB:					
Ockley-----------	0-10	5.6-7.3	1.0-2.0	6.0-16	0
	10-39	4.5-6.5	0.0-1.0	10-22	0
	39-65	5.1-6.0	0.0-0.5	6.0-18	0
	65-80	7.4-8.4	0.0-0.5	3.0-9.0	5-30
OdC2:					
Ockley-----------	0-10	5.6-7.3	0.5-1.5	4.0-14	0
	10-40	4.5-6.5	0.0-1.0	10-22	0
	40-72	5.1-6.0	0.0-0.5	6.0-18	0
	72-80	7.4-8.4	0.0-0.5	3.0-9.0	5-30

Table 24.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
OeA:					
Odell----------	0-12	5.1-7.3	2.0-4.0	11-25	0
	12-46	5.6-7.3	0.2-1.0	10-23	0
	46-55	6.6-8.4	0.0-1.0	4.0-17	0-10
	55-80	7.4-8.4	0.0-0.2	4.0-13	5-35
Pg.					
Pits, gravel					
Pk.					
Pits, quarry					
RcA:					
Randolph--------	0-13	5.1-7.3	1.0-3.0	8.0-22	0
	13-37	5.1-7.8	0.5-1.0	14-30	0-15
	37-43	---	---	---	---
ReA:					
Reesville-------	0-8	5.6-7.3	2.0-4.0	10-26	0
	8-47	5.1-7.8	0.5-1.0	12-25	0
	47-54	7.4-8.4	0.3-0.5	8.0-15	10-35
	54-80	7.4-8.4	0.1-0.3	5.0-15	15-35
ReB:					
Reesville-------	0-8	5.6-7.3	2.0-4.0	10-26	0
	8-35	5.1-7.8	0.5-1.0	12-25	0
	35-48	7.4-8.4	0.3-0.5	8.0-15	10-35
	48-80	7.4-8.4	0.1-0.3	5.0-15	15-35
RnA:					
Ross------------	0-14	6.1-7.8	3.0-5.0	12-26	0
	14-31	6.1-8.4	1.0-3.0	8.0-20	0-20
	31-80	6.1-8.4	0.5-2.0	2.0-15	0-30
RoA:					
Ross------------	0-25	6.1-7.8	3.0-5.0	12-26	0
	25-80	6.1-8.4	0.5-2.0	2.0-15	0-30
RsA:					
Rossburg--------	0-21	6.1-7.8	4.0-8.0	13-32	0
	21-45	6.1-7.8	0.5-2.0	8.0-22	0
	45-80	6.6-8.4	0.5-2.0	2.0-15	0-30
RuB2:					
Russell---------	0-8	5.1-7.3	0.5-2.0	5.0-19	0
	8-26	4.5-6.0	0.5-1.0	11-22	0
	26-49	5.1-7.3	0.0-1.0	9.0-22	0
	49-80	7.4-8.4	0.0-0.5	5.0-18	15-35
Xenia-----------	0-6	5.6-7.3	1.0-3.0	6.0-20	0
	6-26	5.1-7.3	0.2-1.0	10-23	0
	26-43	5.6-7.3	0.0-1.0	9.0-23	0
	43-80	7.4-8.4	0.0-0.5	4.0-13	15-50
SaA:					
Sardinia--------	0-8	5.6-7.3	1.0-3.0	10-20	0
	8-66	5.1-6.5	0.5-1.0	10-21	0
	66-80	5.6-8.4	0.1-0.3	8.0-21	0-10

Table 24.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
SaB:					
Sardinia--------	0-8	5.6-7.3	1.0-3.0	10-20	0
	8-50	5.1-6.5	0.5-1.0	10-21	0
	50-64	5.6-7.3	0.3-0.5	10-21	0
	64-80	5.6-8.4	0.1-0.3	8.0-21	0-10
ScA:					
Secondcreek-----	0-20	5.6-7.3	2.0-4.0	14-20	0
	20-42	6.6-7.8	0.0-2.0	17-25	0
	42-57	7.4-8.4	0.0-0.1	15-21	0
	57-80	7.4-8.4	0.0-0.1	13-19	0-15
SeA:					
Secondcreek-----	0-23	5.6-7.3	2.0-4.0	16-23	0
	23-44	6.6-7.8	0.0-2.0	17-25	0
	44-57	7.4-8.4	0.0-0.1	15-21	0
	57-80	7.4-8.4	0.0-0.1	13-19	0-15
ShA:					
Shoals----------	0-12	6.6-7.8	2.0-4.0	12-27	0-5
	12-38	6.6-8.4	0.5-2.0	8.0-24	0-10
	38-80	6.6-8.4	0.5-2.0	3.0-19	0-25
SmA:					
Sligo-----------	0-9	6.6-8.4	1.0-2.0	9.0-15	0
	9-58	6.6-8.4	1.0-2.0	9.0-15	0
	58-80	6.6-8.4	0.0-1.0	3.0-6.0	2-10
SnA:					
Sloan-----------	0-21	6.1-7.8	3.0-6.0	13-26	0
	21-48	6.1-8.4	0.5-2.0	10-18	0-10
	48-68	6.6-8.4	0.5-2.0	5.0-15	0-20
	68-80	6.6-8.4	0.5-2.0	2.0-8.0	0-25
SrA:					
Stringley-------	0-6	7.4-8.4	0.5-2.0	12-18	10-25
	6-48	7.9-9.0	0.0-0.1	8.0-12	25-50
	48-80	7.9-9.0	0.0-0.1	6.0-10	25-50
Sligo-----------	0-6	6.6-7.8	1.0-2.0	9.0-15	0
	6-48	6.6-8.4	1.0-2.0	9.0-15	0
	48-80	6.6-8.4	0.0-1.0	3.0-6.0	2-10
TaA:					
Taggart---------	0-10	4.5-7.3	1.0-3.0	4.0-17	0
	10-55	4.5-7.3	0.0-0.5	4.0-16	0
	55-80	5.1-6.5	0.0-0.5	4.0-16	0
TpA:					
Treaty----------	0-14	5.6-7.3	4.0-6.0	9.0-17	0
	14-38	6.1-7.8	1.0-2.0	18-20	0
	38-55	6.6-8.4	0.5-1.0	18-20	0-25
	55-80	7.4-8.4	0.0-1.0	2.0-9.0	15-40
TrA:					
Treaty----------	0-16	5.6-7.3	4.0-6.0	27-36	0
	16-32	6.1-7.8	1.0-2.0	18-20	0
	32-63	6.6-8.4	0.5-1.0	18-20	0-25
	63-80	7.4-8.4	0.0-1.0	2.0-9.0	15-40

Table 24.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
Ud. Udorthents					
W. Water					
WaC3:					
Wapahani--------	0-3	6.1-7.3	0.5-1.0	13-16	0
	3-18	6.1-7.8	0.0-0.5	9.0-20	0-5
	18-80	7.4-8.4	0.0-0.5	2.0-9.0	25-45
Miamian---------	0-3	4.5-7.3	0.5-2.0	14-20	0
	3-8	5.1-7.3	0.5-1.0	12-22	0
	8-28	5.1-7.8	0.3-1.0	17-28	0-15
	28-80	7.4-8.4	0.1-0.5	7.0-16	25-50
WaD3:					
Wapahani--------	0-3	6.1-7.3	0.5-1.0	13-16	0
	3-19	6.1-7.8	0.0-0.5	9.0-20	0-5
	19-80	7.4-8.4	0.0-0.5	2.0-9.0	25-45
Miamian---------	0-3	4.5-7.3	0.5-2.0	14-20	0
	3-24	5.1-7.8	0.3-1.0	17-28	0-15
	24-80	7.4-8.4	0.1-0.5	7.0-16	25-50
WcA:					
Westboro--------	0-11	6.1-7.3	1.0-2.0	6.0-12	0
	11-27	4.5-6.0	0.1-0.5	6.0-16	0
	27-37	4.5-6.0	0.0-0.5	8.0-16	0
	37-80	4.5-7.3	0.0-0.5	16-24	0
Schaffer--------	0-11	4.5-7.3	1.0-2.0	6.0-12	0
	11-26	4.5-6.0	0.1-0.5	12-22	0
	26-36	5.1-6.5	0.0-0.5	8.0-14	0
	36-80	6.1-7.3	0.0-0.5	16-24	0
WcB:					
Westboro--------	0-8	6.1-7.3	1.0-2.0	6.0-12	0
	8-21	4.5-6.0	0.1-0.5	6.0-16	0
	21-30	4.5-6.0	0.0-0.5	8.0-16	0
	30-80	4.5-7.3	0.0-0.5	16-24	0
Schaffer--------	0-8	4.5-7.3	1.0-2.0	6.0-12	0
	8-28	4.5-6.0	0.1-0.5	12-22	0
	28-38	5.1-6.5	0.0-0.5	8.0-14	0
	38-80	6.1-7.3	0.0-0.5	16-24	0
WmA:					
Williamsburg----	0-10	4.5-6.5	1.0-3.0	8.0-21	0
	10-15	4.5-6.0	0.5-1.0	8.0-18	0
	15-52	4.5-6.0	0.3-0.5	10-20	0
	52-65	4.5-6.0	0.2-0.5	8.0-24	0
	65-80	5.6-7.8	0.1-0.3	6.0-18	0-10
WmB:					
Williamsburg----	0-8	4.5-6.5	1.0-3.0	8.0-21	0
	8-18	4.5-6.0	0.5-1.0	8.0-18	0
	18-38	4.5-6.0	0.3-0.5	10-20	0
	38-63	4.5-6.0	0.2-0.5	8.0-24	0
	63-80	5.6-7.8	0.1-0.3	6.0-18	0-10

Table 24.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
XaA:					
Xenia-----------	0-12	5.6-7.3	1.0-3.0	6.0-20	0
	12-34	5.1-7.3	0.2-1.0	10-23	0
	34-58	5.6-7.3	0.0-1.0	9.0-23	0
	58-80	7.4-8.4	0.0-0.5	4.0-13	15-50
XaB:					
Xenia-----------	0-8	5.6-7.3	1.0-3.0	6.0-20	0
	8-34	5.1-7.3	0.2-1.0	10-23	0
	34-55	5.6-7.3	0.0-1.0	9.0-23	0
	55-80	7.4-8.4	0.0-0.5	4.0-13	15-50
XaB2:					
Xenia-----------	0-7	5.6-7.3	0.5-2.5	4.0-18	0
	7-28	5.1-7.3	0.2-1.0	10-23	0
	28-56	5.6-7.3	0.0-1.0	9.0-23	0
	56-80	7.4-8.4	0.0-0.5	4.0-13	15-50

Table 25.—Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro-logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
BhA, BhB:										
Birkbeck	B	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-May	2.5-3.5	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
BmA:										
Blanchester	B	Jan-Apr	0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
CaD2, CaE2:										
Casco	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
CbB, CbB2:										
Celina	C	Jan-Apr	1.5-3.0	1.6-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CcA:										
Celina	C	Jan-Apr	1.5-3.0	1.6-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Crosby	C	Jan-Apr	0.5-1.5	1.0-2.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	1.0-2.0	Perched	---	---	None	---	None
CeB, CeB2:										
Celina	C	Jan-Apr	1.5-3.0	1.6-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Losantville	C	Jan-Apr	1.0-2.0	3.0-4.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CmA:										
Clermont	D	Jan-May	0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
CpA:										
Coblen	B	Jan-May	1.5-3.0	>6.0	Apparent	---	---	None	Very brief	Rare
		Jun	---	---	---	---	---	None	Very brief	Rare
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Very brief	Rare

Table 25.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
CrB:										
Corwin	B	Jan-Apr	1.5-2.5	2.0-3.5	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	1.5-2.5	2.0-3.5	Perched	---	---	None	---	None
CtA, CtB:										
Crosby	C	Jan-Apr	0.5-1.5	1.0-2.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	1.0-2.0	Perched	---	---	None	---	None
Celina	C	Jan-Apr	1.5-3.0	1.6-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CuC2, CuD2:										
Crouse	C	Jan-May	3.5-4.0	4.0-5.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
Miamian	C	Jan-May	2.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
DhA, DuA:										
Dunham	B	Jan	---	---	---	---	---	None	---	None
		Feb-Jun	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jul-Dec	---	---	---	---	---	None	---	None
EgB, EkC2:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
FgA, FgB:										
Fincastle	C	Jan-Apr	1.0-1.5	1.5-2.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
FnA, FnB, FnC2:										
Fox	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
HkD2, HkE2, HkF2:										
Hickory	B	Jan-Apr	4.0-6.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
HnE2:										
Hickory	B	Jan-Apr	4.0-6.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Morrisville	C	Jan-Apr	2.5-3.5	3.5-5.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.5-3.5	3.5-5.0	Perched	---	---	None	---	None

Table 25.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
JrA, JrB, JrC2:										
Jonesboro-------	C	Jan-Apr	1.5-2.5	1.6-3.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Rossmoyne-------	C	Jan-Apr	1.5-2.5	1.6-3.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
KnA, KoA:										
Kokomo----------	B	Jan-May	0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
LbA, LbB, LbC2:										
Libre-----------	B	Jan-Apr	2.5-3.5	3.0-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
LoC2:										
Loudon----------	C	Jan-Apr	1.5-2.5	1.6-3.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
LuA, LuB, LuC2, LuD2, LuF2:										
Lumberton------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MhB2, MhC2, MhD2:										
Miamian---------	C	Jan-May	2.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
MnE2, MnF2:										
Miamian---------	C	Jan-May	2.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
Thrifton--------	C	Jan-May	1.0-2.0	1.5-2.5	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	1.0-2.0	1.5-2.5	Perched	---	---	None	---	None
MoE2, MoF2:										
Miamian---------	C	Jan-May	2.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
Crouse----------	C	Jan-May	3.5-6.0	5.0-6.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
MvD2, MvE2:										
Morrisville-----	C	Jan-Apr	2.0-3.5	3.5-5.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.0-3.5	3.5-5.0	Perched	---	---	None	---	None

Table 25.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
NhC2:										
Nicely	B	Jan-May	1.5-2.5	4.0-6.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
OcA, OcB:										
Ockley	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
OdA, OdB, OdC2:										
Ockley	B	Jan-May	4.0-6.0	5.0-6.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
OeA:										
Odell	B	Jan-May	0.5-1.5	>6.0	Apparent	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
Pg.										
Pits, gravel										
Pk.										
Pits, quarry										
RcA:										
Randolph	C	Jan-Apr	0.5-1.5	1.0-2.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
ReA, ReB:										
Reesville	C	Jan-Apr	0.5-1.5	1.0-2.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RnA:										
Ross	B	Jan	---	---	---	---	---	None	Brief	Occasional
		Feb-Apr	4.0-6.0	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Occasional
RoA:										
Ross	B	Jan	---	---	---	---	---	None	Brief	Frequent
		Feb-Apr	4.0-6.0	>6.0	Apparent	---	---	None	Brief	Frequent
		May-Jun	---	---	---	---	---	None	Brief	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Frequent
RsA:										
Rossburg	B	Jan-Apr	3.5-6.0	>6.0	Apparent	---	---	None	Very brief	Rare
		May-Jun	---	---	---	---	---	None	Very brief	Rare
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Very brief	Rare

Table 25.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
RuB2:										
Russell----------	B	Jan-Apr	3.5-6.0	4.0-6.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	3.5-6.0	4.0-6.0	Perched	---	---	None	---	None
Xenia------------	B	Jan-Apr	2.0-3.5	4.0-6.0	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	2.0-3.5	4.0-6.0	Perched	---	---	None	---	None
SaA, SaB:										
Sardinia---------	C	Jan-Apr	1.5-3.0	3.0-6.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
ScA, SeA:										
Secondcreek------	D	Jan-May	0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
ShA:										
Shoals-----------	C	Jan-Apr	0.5-1.5	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	---	---	---	---	---	None	Brief	Occasional
SmA:										
Sligo------------	B	Jan-May	2.5-3.5	>6.0	Apparent	---	---	None	Brief	Occasional
		Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Occasional
SnA:										
Sloan------------	B/D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	Brief	Occasional
SrA:										
Stringley--------	B	Jan-Feb	---	---	---	---	---	None	Brief	Occasional
		Mar-May	3.5-6.0	>6.0	Apparent	---	---	None	Brief	Occasional
		Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Occasional
Sligo------------	B	Jan-May	2.5-3.5	>6.0	Apparent	---	---	None	Brief	Occasional
		Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Occasional

Table 25.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
TaA:										
Taggart	C	Jan-Apr	1.0-1.5	>6.0	Apparent	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	1.0-1.5	>6.0	Apparent	---	---	None	---	None
TpA, TrA:										
Treaty	B	Jan-May	0.0-1.0	>6.0	Apparent	0.0-0.5	Very long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	>6.0	Apparent	0.0-0.5	Very long	Frequent	---	None
Ud.										
Udorthents										
W.										
Water										
WaC3, WaD3:										
Wapahani	C	Jan-Apr	1.0-2.0	1.5-2.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Miamian	C	Jan-May	2.5-3.5	3.0-4.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
WcA:										
Westboro	D	Jan-May	0.5-2.0	1.5-3.5	Perched	---	---	None	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-2.0	1.5-3.5	Perched	---	---	None	---	None
Schaffer	C	Jan-Apr	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
WcB:										
Westboro	D	Jan-Apr	0.5-2.0	1.5-3.5	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-2.0	1.5-3.5	Perched	---	---	None	---	None
Schaffer	C	Jan-Apr	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	0.5-1.5	1.5-3.5	Perched	---	---	None	---	None
WmA, WmB:										
Williamsburg	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
XaA, XaB, XaB2:										
Xenia	B	Jan-Apr	2.0-3.5	4.0-6.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None

Table 26.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
BhA, BhB:							
Birkbeck	---	>80	---	---	High	High	Moderate.
BmA:							
Blanchester	---	>80	---	---	High	High	High.
CaD2:							
Casco	Strongly contrasting textural stratification	10-25	---	Noncemented	Low	Moderate	Low.
CaE2:							
Casco	Strongly contrasting textural stratification	10-23	---	Noncemented	Low	Moderate	Low.
CbB, CbB2:							
Celina	Dense material	20-40	---	Strongly cemented	High	High	Moderate.
CcA:							
Celina	Dense material	20-40	---	Strongly cemented	High	High	Moderate.
Crosby	Dense material	20-40	---	Strongly cemented	High	High	Moderate.
CeB, CeB2:							
Celina	Dense material	20-40	---	Strongly cemented	High	High	Moderate.
Losantville	Dense material	12-20	---	Strongly cemented	Moderate	Moderate	Low.
CmA:							
Clermont	---	>80	---	---	High	High	High.
CpA:							
Coblen	---	>80	---	---	High	High	Low.
CrB:							
Corwin	Dense material	24-40	---	Strongly cemented	Moderate	High	Moderate.

Table 26.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
CtA, CtB:							
Crosby	Dense material	20-40	---	Strongly cemented	High	High	Moderate.
Celina	Dense material	20-40	---	Strongly cemented	High	High	Moderate.
CuC2, CuD2:							
Crouse	---	>80	---	---	High	High	Moderate.
Miamian	Dense material	20-41	---	Strongly cemented	Moderate	Moderate	Moderate.
DhA, DuA:							
Dunham	---	>80	---	---	High	High	Moderate.
EgB, EkC2:							
Eldean	Strongly contrasting textural stratification	20-40	---	Noncemented	Moderate	High	Moderate.
FgA, FgB:							
Fincastle	Dense material	40-60	---	Moderately cemented	High	High	Moderate.
FnA, FnB, FnC2:							
Fox	Strongly contrasting textural stratification	24-40	---	Noncemented	Moderate	Moderate	Moderate.
HkD2, HkE2, HkF2:							
Hickory	---	>80	---	---	Moderate	Moderate	Moderate.
HnE2:							
Hickory	---	>80	---	---	Moderate	Moderate	Moderate.
Morrisville	Bedrock (lithic)	40-60	---	Strongly cemented	Moderate	Moderate	Moderate.
JrA, JrB, JrC2:							
Jonesboro	---	>80	---	---	High	High	High.
Rossmoyne	Fragipan	18-30	10-20	Noncemented	High	High	High.
KnA, KoA:							
Kokomo	---	>80	---	---	High	High	Moderate.

Table 26.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
LbA, LbB, LbC2:							
Libre	Dense material	28-60	---	Moderately cemented	High	Moderate	High.
LoC2:							
Loudon	Bedrock (paralithic)	40-70	---	Moderately cemented	High	High	Moderate.
LuA, LuB, LuC2, LuD2, LuF2:							
Lumberton	Bedrock (lithic)	33-60	---	Very strongly cemented	High	High	Moderate.
MhB2, MhC2, MhD2:							
Miamian	Dense material	20-40	---	Strongly cemented	Moderate	Moderate	Moderate.
MnE2, MnF2:							
Miamian	Dense material	20-40	---	Strongly cemented	Moderate	Moderate	Moderate.
Thrifton	Dense material	10-20	---	Strongly cemented	Moderate	Low	Low.
MoE2, MoF2:							
Miamian	Dense material	20-40	---	Strongly cemented	Moderate	Moderate	Moderate.
Crouse	---	>80	---	---	High	High	Moderate.
MvD2, MvE2:							
Morrisville	Bedrock (lithic)	40-60	---	Very strongly cemented	Moderate	Moderate	Moderate.
NhC2:							
Nicely	---	>80	---	---	Moderate	Moderate	Moderate.
OcA, OcB:							
Ockley	Strongly contrasting textural stratification	40-70	---	Noncemented	Moderate	Moderate	Moderate.
OdA, OdB, OdC2:							
Ockley	---	>80	---	---	Moderate	Moderate	Moderate.
OeA:							
Odell	Dense material	35-59	---	Moderately cemented	High	High	Moderate.

Table 26.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
Pg. Pits, gravel							
Pk. Pits, quarry							
RcA: Randolph	Bedrock (lithic)	20-40	---	Very strongly cemented	High	High	Moderate.
ReA, ReB: Reesville	Dense material	30-60	---	Moderately cemented	High	High	Moderate.
RnA, RoA: Ross	---	>80	---	---	Moderate	Low	Low.
RsA: Rossburg	---	>80	---	---	Moderate	Low	Low.
RuB2: Russell	Dense material	40-60	---	Moderately cemented	High	Moderate	Moderate.
Xenia	Dense material	40-60	---	Moderately cemented	High	High	Moderate.
SaA, SaB: Sardinia	---	>80	---	---	High	High	Moderate.
ScA, SeA: Secondcreek	---	>80	---	---	High	High	Low.
ShA: Shoals	---	>80	---	---	High	High	Low.
SmA: Sligo	---	>80	---	---	Moderate	Low	Low.
SnA: Sloan	---	>80	---	---	High	High	Low.
SrA: Stringley	---	>80	---	---	Moderate	Low	Low.
Sligo	---	>80	---	---	Moderate	Low	Low.

Table 26.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
TaA:							
Taggart	---	>80	---	---	High	High	High.
TpA, TrA:							
Treaty	---	>80	---	---	High	High	Low.
Ud.							
Udorthents							
W.							
Water							
WaC3, WaD3:							
Wapahani	Dense material	10-20	---	Strongly cemented	Moderate	Moderate	Low.
Miamian	Dense material	20-40	---	Strongly cemented	Moderate	Moderate	Moderate.
WcA, WcB:							
Westboro	---	>80	---	---	High	High	High.
Schaffer	Fragipan	20-36	10-20	Noncemented	High	High	High.
WmA, WmB:							
Williamsburg	---	>80	---	---	Moderate	Moderate	Moderate.
XaA, XaB, XaB2:							
Xenia	Dense material	20-59	---	Moderately cemented	High	High	Moderate.

Table 27.—Classification of the Soils

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Birkbeck	Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs
Blanchester	Fine-silty, mixed, superactive, mesic Mollic Endoaqualfs
Casco	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, mesic Typic Hapludalfs
Celina	Fine, mixed, active, mesic Aquic Hapludalfs
Clermont	Fine-silty, mixed, superactive, mesic Typic Glossaqualfs
Coblen	Coarse-loamy, mixed, active, mesic Fluvaquentic Hapludolls
Corwin	Fine-loamy, mixed, active, mesic Oxyaquic Argiudolls
Crosby	Fine, mixed, active, mesic Aeric Epiaqualfs
Crouse	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Dunham	Fine-silty, mixed, superactive, mesic Typic Endoaquolls
Eldean	Fine, mixed, superactive, mesic Typic Hapludalfs
*Fincastle	Fine-silty, mixed, superactive, mesic Aeric Epiaqualfs
Fox	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, mesic Typic Hapludalfs
Hickory	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Jonesboro	Fine-silty, mixed, superactive, mesic Glossaquic Hapludalfs
Kokomo	Fine, mixed, superactive, mesic Typic Argiaquolls
Libre	Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs
Losantville	Fine, mixed, active, mesic Oxyaquic Hapludalfs
Loudon	Fine, mixed, active, mesic Aquic Hapludalfs
Lumberton	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Miamian	Fine, mixed, active, mesic Oxyaquic Hapludalfs
Morrisville	Fine, mixed, active, mesic Oxyaquic Hapludalfs
Nicely	Fine-loamy, mixed, active, mesic Aquic Hapludalfs
Ockley	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Odell	Fine-loamy, mixed, superactive, mesic Aquic Argiudolls
*Randolph	Fine, mixed, active, mesic Aeric Endoaqualfs
Reesville	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs
Ross	Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls
Rossburg	Fine-loamy, mixed, superactive, mesic Fluventic Hapludolls
Rossmoyne	Fine-silty, mixed, superactive, mesic Aquic Fragiudalfs
Russell	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Sardinia	Fine-silty, mixed, active, mesic Aquic Hapludalfs
Schaffer	Fine-silty, mixed, active, mesic Aeric Fragiaqualfs
Secondcreek	Fine, mixed, superactive, mesic Typic Endoaquolls
Shoals	Fine-loamy, mixed, superactive, nonacid, mesic Aeric Fluvaquents
Sligo	Fine-loamy, mixed, superactive, nonacid, mesic Oxyaquic Udifluvents
Sloan	Fine-loamy, mixed, superactive, mesic Fluvaquentic Endoaquolls
Stringley	Coarse-loamy, mixed, superactive, calcareous, mesic Typic Udifluvents
*Taggart	Fine-silty, mixed, active, mesic Aeric Epiaqualfs
Thrifton	Fine-loamy, mixed, superactive, mesic Oxyaquic Hapludalfs
Treaty	Fine-silty, mixed, superactive, mesic Typic Argiaquolls
Udorthents	Mixed Typic Udorthents
Wapahani	Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs
Westboro	Fine-silty, mixed, active, mesic Aeric Epiaqualfs
Williamsburg	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
*Xenia	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs

Table 28.—Interpretive Groups

(A complex is treated as a single management unit in the "Land capability classification" and "Prime farmland" columns. See text for definitions of the groups. Absence of an entry indicates that the map unit is not suited to the intended use or is not rated)

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
BhA------------------ Birkbeck	1	A-6	All areas are prime farmland	No
BhB------------------ Birkbeck	2e	A-6	All areas are prime farmland	No
BmA------------------ Blanchester	3w	C-1	Prime farmland if drained	Yes
CaD2----------------- Casco	6e	B-1	Not prime farmland	No
CaE2----------------- Casco	7e	B-2	Not prime farmland	No
CbB------------------ Celina	2e	A-6	All areas are prime farmland	No
CbB2----------------- Celina	2e	A-6	All areas are prime farmland	No
CcA------------------	1		All areas are prime farmland	
Celina--------------		A-6		No
Crosby--------------		C-2		No
CeB------------------	2e		All areas are prime farmland	
Celina--------------		A-6		No
Losantville---------		B-1		No
CeB2-----------------	2e		All areas are prime farmland	
Celina--------------		A-6		No
Losantville---------		B-1		No
CmA------------------ Clermont	3w	C-2	Not prime farmland	Yes
CpA------------------ Coblen	1	A-6	All areas are prime farmland	No
CrB------------------ Corwin	2e	B-1	All areas are prime farmland	No
CtA------------------	2w		Prime farmland if drained	
Crosby--------------		C-2		No
Celina--------------		A-6		No
CtB------------------	2e		Prime farmland if drained	
Crosby--------------		C-2		No
Celina--------------		A-6		No

Table 28.—Interpretive Groups—Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
CuC2	3e		Not prime farmland	
Crouse		A-6		No
Miamian		A-1		No
CuD2	4e		Not prime farmland	
Crouse		A-6		No
Miamian		A-1		No
DhA, DuA: Dunham	2w	C-1	Prime farmland if drained	Yes
EgB: Eldean	2e	B-1	All areas are prime farmland	No
EkC2: Eldean	3e	B-1	Not prime farmland	No
FgA: Fincastle	2w	C-1	Prime farmland if drained	No
FgB: Fincastle	2e	C-1	Prime farmland if drained	No
FnA: Fox	2s	A-1	All areas are prime farmland	No
FnB: Fox	2e	A-1	All areas are prime farmland	No
FnC2: Fox	3e	A-1	Not prime farmland	No
HkD2: Hickory	3e	A-1	Not prime farmland	No
HkE2: Hickory	6e	A-2	Not prime farmland	No
HkF2: Hickory	7e	A-3	Not prime farmland	No
HnE2	6e		Not prime farmland	
Hickory		A-2		No
Morrisville		B-1		No
JrA	2w		All areas are prime farmland	
Jonesboro		A-6		No
Rossmoyne		F-3		No
JrB	2e		All areas are prime farmland	
Jonesboro		A-6		No
Rossmoyne		F-3		No
JrC2	3e		Not prime farmland	
Jonesboro		A-6		No
Rossmoyne		F-3		No
KnA, KoA: Kokomo	2w	C-1	Prime farmland if drained	Yes

Table 28.—Interpretive Groups—Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
LbA----------------- Libre	1	A-6	All areas are prime farmland	No
LbB----------------- Libre	2e	A-6	All areas are prime farmland	No
LbC2---------------- Libre	3e	A-6	Not prime farmland	No
LoC2---------------- Loudon	3e	A-6	Not prime farmland	No
LuA----------------- Lumberton	1	A-6	All areas are prime farmland	No
LuB----------------- Lumberton	2e	A-6	All areas are prime farmland	No
LuC2---------------- Lumberton	3e	A-6	Not prime farmland	No
LuD2---------------- Lumberton	4e	A-6	Not prime farmland	No
LuF2---------------- Lumberton	7e	F-2	Not prime farmland	No
MhB2---------------- Miamian	2e	A-1	All areas are prime farmland	No
MhC2---------------- Miamian	3e	A-1	Not prime farmland	No
MhD2---------------- Miamian	4e	A-1	Not prime farmland	No
MnE2----------------	6e		Not prime farmland	
Miamian-------------		A-2		No
Thrifton------------		A-2		No
MnF2----------------	7e		Not prime farmland	
Miamian-------------		A-3		No
Thrifton------------		A-3		No
MoE2----------------	6e		Not prime farmland	
Miamian-------------		A-2		No
Crouse--------------		A-2		No
MoF2----------------	7e		Not prime farmland	
Miamian-------------		A-3		No
Crouse--------------		A-3		No
MvD2---------------- Morrisville	4e	B-1	Not prime farmland	No
MvE2---------------- Morrisville	6e	B-1	Not prime farmland	No
NhC2---------------- Nicely	3e	A-1	Not prime farmland	No

Table 28.—Interpretive Groups—Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
OcA------------------ Ockley	1	A-1	All areas are prime farmland	No
OcB------------------ Ockley	2e	A-1	All areas are prime farmland	No
OdA------------------ Ockley	1	A-1	All areas are prime farmland	No
OdB------------------ Ockley	2e	A-1	All areas are prime farmland	No
OdC2----------------- Ockley	3e	A-1	Not prime farmland	No
OeA------------------ Odell	2w	C-1	Prime farmland if drained	No
Pg------------------- Pits, gravel	---	Not rated	Not prime farmland	Unranked
Pk------------------- Pits, quarry	---	Not rated	Not prime farmland	Unranked
RcA------------------ Randolph	3w	C-2	Prime farmland if drained	No
ReA------------------ Reesville	2w	C-1	Prime farmland if drained	No
ReB------------------ Reesville	2e	C-1	Prime farmland if drained	No
RnA------------------ Ross	2w	A-5	All areas are prime farmland	No
RoA------------------ Ross	2w	A-5	Prime farmland if protected from flooding or not frequently flooded during the growing season	No
RsA------------------ Rossburg	1	A-1	All areas are prime farmland	No
RuB2-----------------	2e		All areas are prime farmland	
Russell-------------		A-6		No
Xenia---------------		A-6		No
SaA------------------ Sardinia	2w	A-6	All areas are prime farmland	No
SaB------------------ Sardinia	2e	A-6	All areas are prime farmland	No
ScA, SeA------------- Secondcreek	2w	C-1	Prime farmland if drained	Yes
ShA------------------ Shoals	2w	C-3	Prime farmland if drained	No

Table 28.—Interpretive Groups—Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
SmA------------------ Sligo	2w	A-5	All areas are prime farmland	No
SnA------------------ Sloan	3w	C-3	Prime farmland if drained	Yes
SrA------------------	2w		All areas are prime farmland	
Stringley-----------		A-5		No
Sligo---------------		A-5		No
TaA------------------ Taggart	2w	C-1	Prime farmland if drained	No
TpA, TrA------------- Treaty	2w	C-1	Prime farmland if drained	Yes
Ud------------------- Udorthents	---	Not rated	Not prime farmland	Unranked
W-------------------- Water	---	Not rated	Not prime farmland	Unranked
WaC3-----------------	4e		Not prime farmland	
Wapahani------------		B-1		No
Miamian-------------		A-1		No
WaD3-----------------	6e		Not prime farmland	
Wapahani------------		B-1		No
Miamian-------------		A-1		No
WcA------------------	2w		Prime farmland if drained	
Westboro------------		C-1		No
Schaffer------------		C-2		No
WcB------------------	2e		Prime farmland if drained	
Westboro------------		C-1		No
Schaffer------------		C-2		No
WmA------------------ Williamsburg	1	A-1	All areas are prime farmland	No
WmB------------------ Williamsburg	2e	A-1	All areas are prime farmland	No
XaA------------------ Xenia	1	A-6	All areas are prime farmland	No
XaB, XaB2------------ Xenia	2e	A-6	All areas are prime farmland	No

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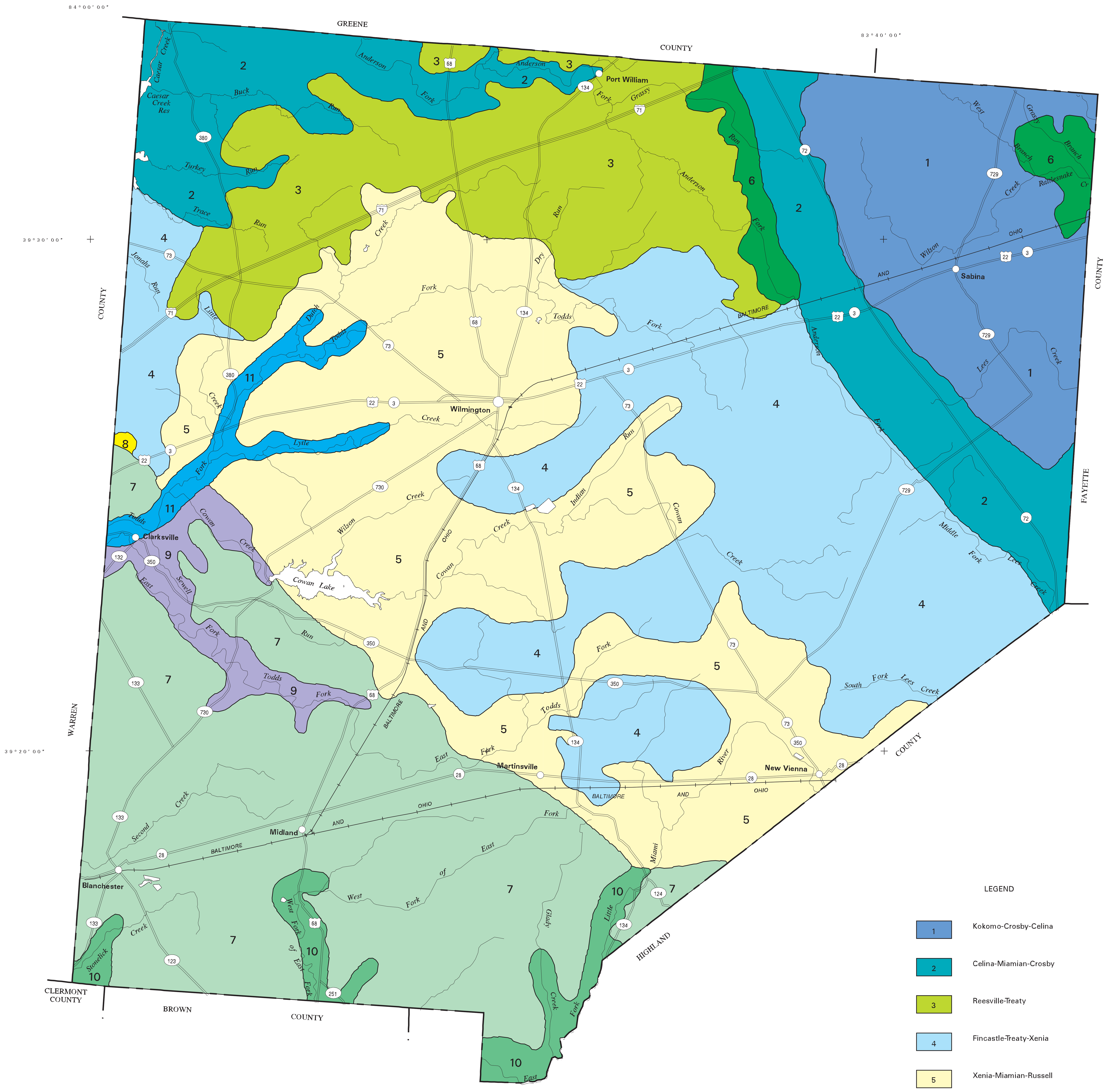


LEGEND

1	Kokomo-Crosby-Celina
2	Celina-Miamian-Crosby
3	Reesville-Treaty
4	Fincastle-Treaty-Xenia
5	Xenia-Miamian-Russell
6	Dunham-Treaty
7	Westboro-Clermont-Jonesboro
8	Secondcreek
9	Hickory-Jonesboro-Sligo
10	Loudon-Hickory-Nicely
11	Stringley-Sligo-Rossburg

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF SOIL AND WATER CONSERVATION
OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
OHIO STATE UNIVERSITY EXTENSION
CLINTON SOIL AND WATER CONSERVATION DISTRICT
CLINTON COUNTY COMMISSIONERS

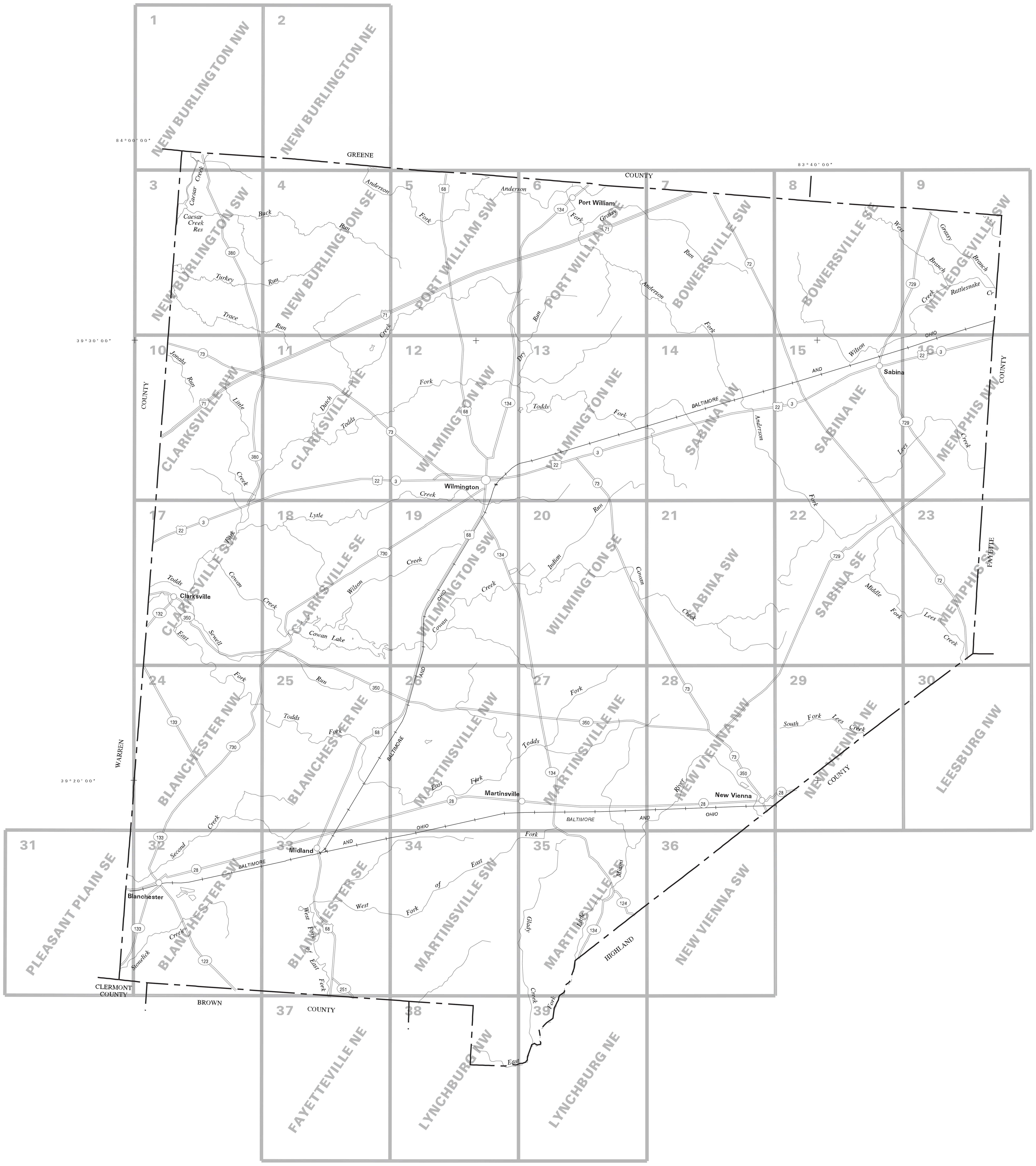
GENERAL SOIL MAP
CLINTON COUNTY, OHIO

MILES

KILOMETERS

SCALE = 1:100000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



N

INDEX TO MAP SHEETS
CLINTON COUNTY, OHIO

1 0 1 2 3
MILES

1 0 1 2 3 4 5 6
KILOMETERS

SCALE = 1:100000

SOIL LEGEND

Map symbols consist of a combination of letters or letters and numbers. The first letter is capital and is the initial one of the map unit name. The lowercase letter that follows separates map units having names that begin with the same letter; however, it does not separate sloping or eroded phases. The second capital letter indicates the class of slope. Symbols without a slope letter are for miscellaneous areas. A final number of 2 indicates that the soil is eroded, and 3 indicates that the soil is severely eroded.

SYMBOL	NAME
BhA	Birkbeck silt loam, 0 to 2 percent slopes
BhB	Birkbeck silt loam, 2 to 6 percent slopes
BmA	Blanchester silty clay loam, 0 to 1 percent slopes
CaD2	Casco silt loam, 12 to 18 percent slopes, eroded
CaE2	Casco silt loam, 18 to 50 percent slopes, eroded
CbB	Celina silt loam, 2 to 6 percent slopes
CbB2	Celina silt loam, 2 to 6 percent slopes, eroded
CcA	Celina-Crosby silt loams, 0 to 2 percent slopes
CeB	Celina-Losantville silt loams, 2 to 6 percent slopes
CeB2	Celina-Losantville silt loams, 2 to 6 percent slopes, eroded
CmA	Clermont silt loam, 0 to 1 percent slopes
CpA	Coblen loam, 0 to 2 percent slopes, rarely flooded
CrB	Corwin silt loam, 2 to 6 percent slopes
CtA	Crosby-Celina silt loams, 0 to 2 percent slopes
CtB	Crosby-Celina silt loams, 2 to 4 percent slopes
CuC2	Crouse-Miamian silt loams, 6 to 12 percent slopes, eroded
CuD2	Crouse-Miamian silt loams, 12 to 18 percent slopes, eroded
DhA	Dunham silt loam, 0 to 2 percent slopes, overwash
DuA	Dunham silty clay loam, 0 to 2 percent slopes
EgB	Eldean silt loam, 2 to 6 percent slopes
EkC2	Eldean gravelly loam, 6 to 12 percent slopes, eroded
FgA	Fincastle silt loam, 0 to 2 percent slopes
FgB	Fincastle silt loam, 2 to 4 percent slopes
FnA	Fox silt loam, 0 to 2 percent slopes
FnB	Fox silt loam, 2 to 6 percent slopes
FnC2	Fox silt loam, 6 to 12 percent slopes, eroded
HkD2	Hickory silt loam, 12 to 18 percent slopes, eroded
HkE2	Hickory silt loam, 18 to 25 percent slopes, eroded
HkF2	Hickory silt loam, 25 to 35 percent slopes, eroded
HnE2	Hickory-Morrisville silt loams, 18 to 25 percent slopes, eroded
JrA	Jonesboro-Rossmoyne silt loams, 0 to 2 percent slopes
JrB	Jonesboro-Rossmoyne silt loams, 2 to 6 percent slopes
JrC2	Jonesboro-Rossmoyne silt loams, 6 to 12 percent slopes, eroded
KnA	Kokomo silt loam, 0 to 1 percent slopes
KoA	Kokomo silty clay loam, 0 to 1 percent slopes
LbA	Libre silt loam, 0 to 2 percent slopes
LbB	Libre silt loam, 2 to 6 percent slopes
LbC2	Libre silt loam, 6 to 12 percent slopes, eroded
LoC2	Loudon silt loam, 6 to 12 percent slopes, eroded
LuA	Lumberton silt loam, 0 to 2 percent slopes
LuB	Lumberton silt loam, 2 to 6 percent slopes
LuC2	Lumberton silt loam, 6 to 12 percent slopes, eroded
LuD2	Lumberton silt loam, 12 to 18 percent slopes, eroded
LuF2	Lumberton silt loam, 25 to 50 percent slopes, eroded
MhB2	Miamian silt loam, 2 to 6 percent slopes, eroded
MhC2	Miamian silt loam, 6 to 12 percent slopes, eroded
MhD2	Miamian silt loam, 12 to 18 percent slopes, eroded
MnE2	Miamian-Thrifton complex, 18 to 25 percent slopes, eroded
MnF2	Miamian-Thrifton complex, 25 to 50 percent slopes, eroded
MoE2	Miamian-Crouse silt loams, 18 to 25 percent slopes, eroded
MoF2	Miamian-Crouse silt loams, 25 to 50 percent slopes, eroded
MvD2	Morrisville silty clay loam, 12 to 18 percent slopes, eroded
MvE2	Morrisville silty clay loam, 18 to 25 percent slopes, eroded
NhC2	Nicely silt loam, 6 to 12 percent slopes, eroded
OcA	Ockley silt loam, 0 to 2 percent slopes
OcB	Ockley silt loam, 2 to 6 percent slopes
OdA	Ockley silt loam, till substratum, 0 to 2 percent slopes
OdB	Ockley silt loam, till substratum, 2 to 6 percent slopes
OdC2	Ockley silt loam, till substratum, 6 to 12 percent slopes, eroded
OeA	Odell silt loam, 0 to 2 percent slopes
Pg	Pits, gravel
Pk	Pits, quarry
RcA	Randolph silt loam, 0 to 2 percent slopes
ReA	Reesville silt loam, 0 to 2 percent slopes
ReB	Reesville silt loam, 2 to 4 percent slopes
RnA	Ross loam, 0 to 1 percent slopes, occasionally flooded
RoA	Ross silt loam, 0 to 1 percent slopes, frequently flooded
RsA	Rossburg silt loam, 0 to 2 percent slopes, rarely flooded
RuB2	Russell-Xenia silt loams, 2 to 6 percent slopes, eroded
SaA	Sardinia silt loam, 0 to 2 percent slopes
SaB	Sardinia silt loam, 2 to 6 percent slopes
ScA	Secondcreek silt loam, 0 to 1 percent slopes, overwash
SeA	Secondcreek silty clay loam, 0 to 1 percent slopes
ShA	Shoals silt loam, 0 to 1 percent slopes, occasionally flooded
SmA	Sligo silt loam, 0 to 1 percent slopes, occasionally flooded
SnA	Sloan silt loam, sandy substratum, 0 to 1 percent slopes, occasionally flooded
SrA	Stringley-Sligo loams, 0 to 2 percent slopes, occasionally flooded
TaA	Taggart silt loam, 0 to 2 percent slopes
TpA	Treaty silt loam, 0 to 1 percent slopes, overwash
TrA	Treaty silty clay loam, 0 to 1 percent slopes
Ud	Udorthents, loamy
W	Water
WaC3	Wapahani-Miamian clay loams, 6 to 12 percent slopes, severely eroded
WaD3	Wapahani-Miamian clay loams, 12 to 18 percent slopes, severely eroded
WcA	Westboro-Schaffer silt loams, 0 to 2 percent slopes
WcB	Westboro-Schaffer silt loams, 2 to 4 percent slopes
WmA	Williamsburg silt loam, 0 to 2 percent slopes
WmB	Williamsburg silt loam, 2 to 6 percent slopes
XaA	Xenia silt loam, 0 to 2 percent slopes
XaB	Xenia silt loam, 2 to 6 percent slopes
XaB2	Xenia silt loam, 2 to 6 percent slopes, eroded

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES
- National, state, or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park)
- Land grant
- Limit of soil survey (label) and/or denied access area
- Field sheet matchline & neatline
- Previously Published Survey

OTHER BOUNDARY (label)
- Airport, airfield
- Cemetery
- City/county park

STATE COORDINATE TICK 1 890 000 FEET

LAND DIVISION CORNER (section and land grants)

GEOGRAPHIC COORDINATE TICK

TRANSPORTATION
- Divided roads
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS
- Interstate — 173, 79 345
- Federal — 287, 410 224
- State — 52, 52 347
- County, farm or ranch — 1283

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES
- Without road
- With road
- With railroad
- Single side slope (showing actual feature location)

DAMS
- Medium or Small

LANDFORM FEATURES
- Prominent hill or peak
- Soil Sample Site

MISCELLANEOUS CULTURAL FEATURES
- Farmstead, house (omit in urban areas)
- Church
- School
- Other Religion (label) — Mt Carmel
- Located object (label) — Ranger Station
- Tank (label) — Petroleum
- Lookout Tower
- Oil and/or Natural Gas Wells
- Windmill
- Lighthouse

HYDROGRAPHIC FEATURES

STREAMS
- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end

DRAINAGE AND IRRIGATION
- Double-line canal (label) — CANAL
- Perennial drainage and/or irrigation ditch
- Intermittent drainage and/ or irrigation ditch

SMALL LAKES, PONDS AND RESERVOIRS
- Perennial water
- Miscellaneous water
- Flood pool line — FLOOD POOL LINE

MISCELLANEOUS WATER FEATURES
- Spring
- Well, artesian
- Well, irrigation

SPECIAL SYMBOLS FOR SOIL SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS — CbB EgB

LANDFORM FEATURES

ESCARPMENTS
- Bedrock
- Other than bedrock

SHORT STEEP SLOPE

GULLY

DEPRESSION, closed

SINKHOLE

EXCAVATIONS

PITS
- Borrow pits
- Gravel pit
- Mine or quarry

LANDFILL

MISCELLANEOUS SURFACE FEATURES
- Blowout
- Clay spot
- Gravelly spot
- Lava flow
- Marsh or swamp
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip
- Sodic spot
- Spoil area
- Stony spot
- Very stony spot
- Wet spot
- Typical pedon

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
NEW BURLINGTON NW QUADRANGLE
SHEET NUMBER 1 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

A	B	C
D		2
E	3	4

A BELLBROOK SE (GREENE COUNTY)
B XENIA SW (GREENE COUNTY)
C XENIA SE (GREENE COUNTY)
D WAYNESVILLE NE (GREENE COUNTY)
2 NEW BURLINGTON NE
E WAYNESVILLE SE (WARREN COUNTY)
3 NEW BURLINGTON SW
4 NEW BURLINGTON SE

INDEX TO ADJOINING 3.75 MAPS

NEW BURLINGTON NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 1 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
NEW BURLINGTON NE QUADRANGLE
SHEET NUMBER 2 OF 39

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

A	B	C
1		D
3	4	5

A XENIA SW (GREENE COUNTY)
B XENIA SE (GREENE COUNTY)
C CEDARVILLE SW (GREENE COUNTY)
1 NEW BURLINGTON NW
D PORT WILLIAM NW (GREENE COUNTY)
3 NEW BURLINGTON SW
4 NEW BURLINGTON SE
5 PORT WILLIAM SW

INDEX TO ADJOINING 3.75 MAPS

NEW BURLINGTON NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 2 OF 39

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
NEW BURLINGTON SW QUADRANGLE
SHEET NUMBER 3 OF 39

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

A	1	2
B		4
C	10	11

A WAYNESVILLE NE (GREENE COUNTY)
1 NEW BURLINGTON NW
2 NEW BURLINGTON NE
B WAYNESVILLE SE (WARREN COUNTY)
4 NEW BURLINGTON SE
C OREGONIA NE (WARREN COUNTY)
10 CLARKSVILLE NW
11 CLARKSVILLE NE

INDEX TO ADJOINING 3.75 MAPS

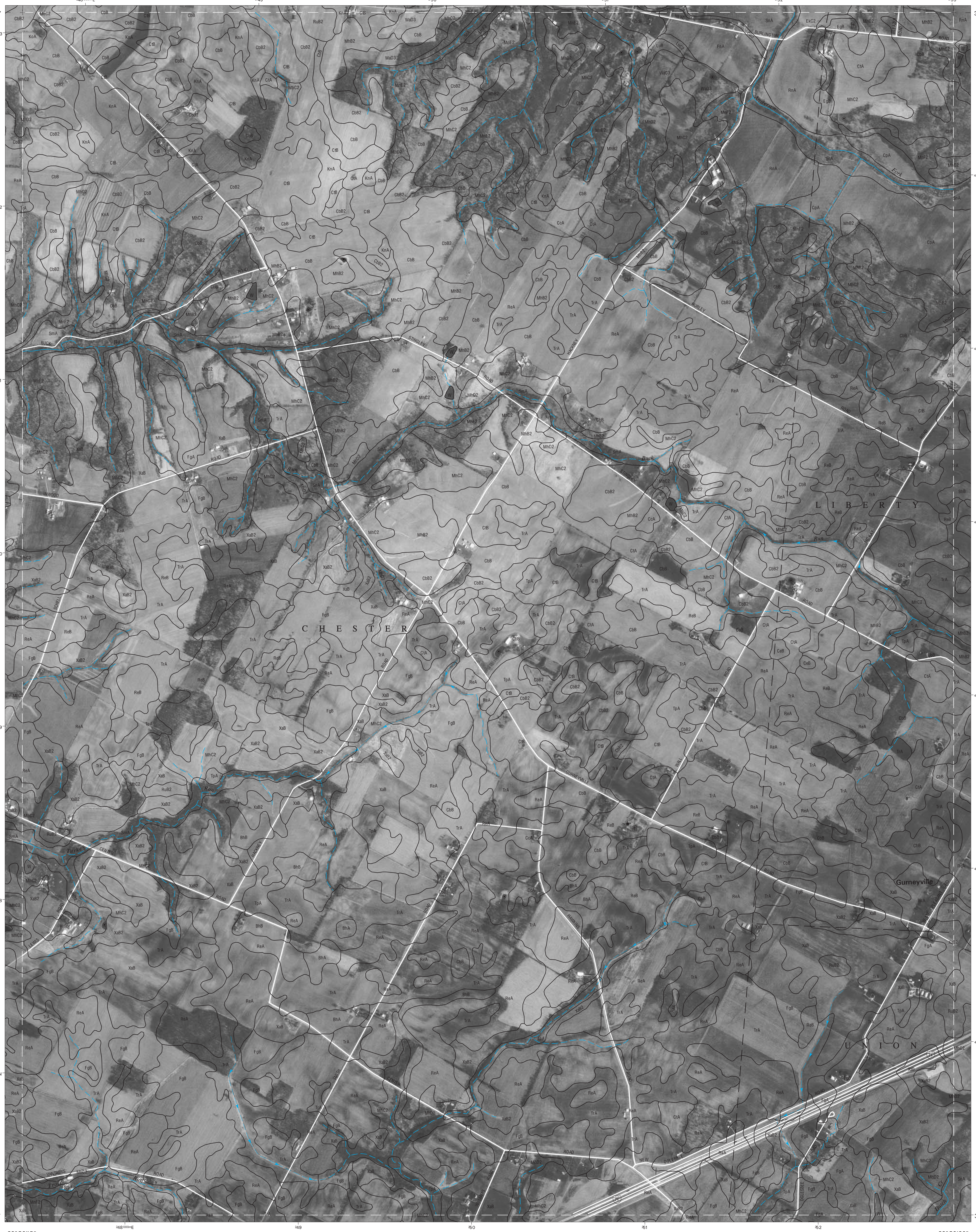
NEW BURLINGTON SW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 3 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
NEW BURLINGTON SE QUADRANGLE
SHEET NUMBER 4 OF 39



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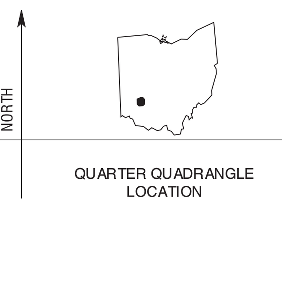
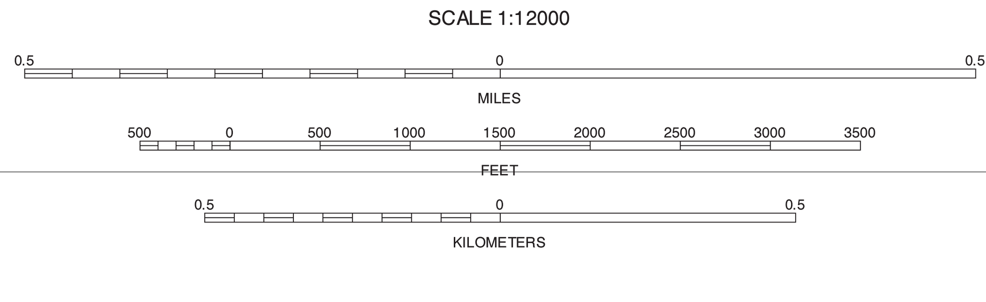
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION



1	2	A
3		5
10	11	12

1 NEW BURLINGTON NW
2 NEW BURLINGTON NE
A PORT WILLIAM NW (GREENE COUNTY)
3 NEW BURLINGTON SW
5 PORT WILLIAM SW
10 CLARKSVILLE NW
11 CLARKSVILLE NE
12 WILMINGTON NW

INDEX TO ADJOINING 3.75 MAPS

NEW BURLINGTON SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 4 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
PORT WILLIAM SW QUADRANGLE (OVERSIZED)
SHEET NUMBER 5 OF 39

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

2	A	B
4		6
11	12	13

INDEX TO ADJOINING 3.75 MAPS

2 NEW BURLINGTON NE
A PORT WILLIAM NW (GREENE COUNTY)
B PORT WILLIAM NE (GREENE COUNTY)
4 NEW BURLINGTON SE
6 PORT WILLIAM SE
11 CLARKSVILLE NE
12 WILMINGTON NW
13 WILMINGTON NE

PORT WILLIAM SW, (OVERSIZED) OHIO
3.75 MINUTE SERIES
SHEET NUMBER 5 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
PORT WILLIAM SE QUADRANGLE
SHEET NUMBER 6 OF 39

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES: 0.5 0 0.5

FEET: 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS: 0.5 0 0.5

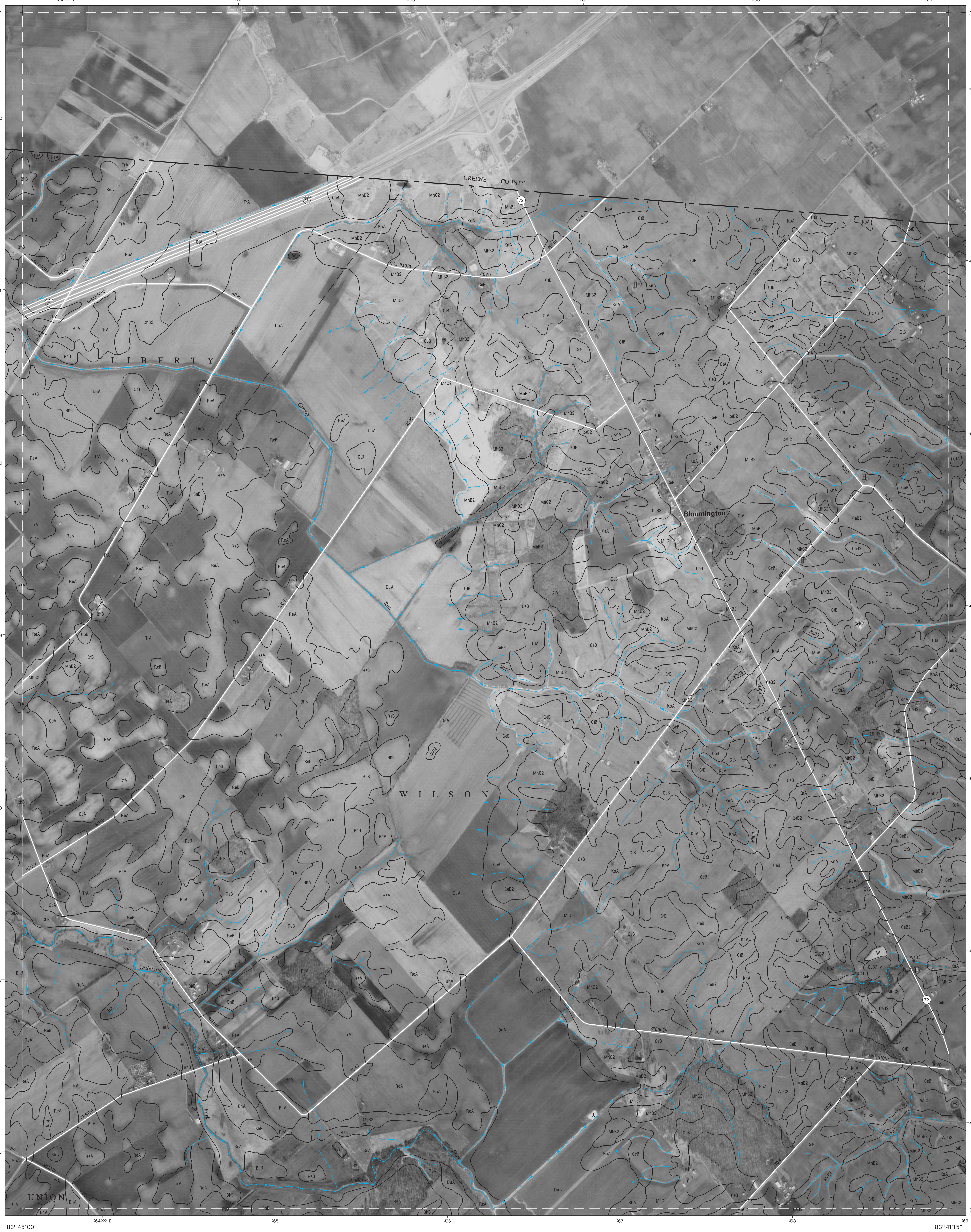
A	B	C
5		7
12	13	14

A PORT WILLIAM NW (GREENE COUNTY)
B PORT WILLIAM NE (GREENE COUNTY)
C BOWERSVILLE NW (GREENE COUNTY)
5 PORT WILLIAM SW
7 BOWERSVILLE SW
12 WILMINGTON NW
13 WILMINGTON NE
14 SABINA NW

INDEX TO ADJOINING 3.75 MAPS

PORT WILLIAM SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 6 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

A	B	C
6		8
13	14	15

A PORT WILLIAM NE (GREENE COUNTY)
B BOWERSVILLE NW (GREENE COUNTY)
C BOWERSVILLE NE (FAYETTE COUNTY)
6 PORT WILLIAM SE
8 BOWERSVILLE SE
13 WILMINGTON NE
14 SABINA NW
15 SABINA NE

INDEX TO ADJOINING 3.75 MAPS

BOWERSVILLE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 7 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
BOWERSVILLE SE QUADRANGLE
SHEET NUMBER 8 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

A	B	C
7		9
14	15	16

A BOWERSVILLE NW (GREENE COUNTY)
B BOWERSVILLE NE (FAYETTE COUNTY)
C MILLEDGEVILLE NW (FAYETTE COUNTY)
7 BOWERSVILLE SW
9 MILLEDGEVILLE SW
14 SABINA NW
15 SABINA NE
16 MEMPHIS NW

INDEX TO ADJOINING 3.75 MAPS

BOWERSVILLE SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 8 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

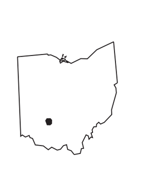
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
MILLEDGEVILLE SW QUADRANGLE
SHEET NUMBER 9 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

A	B	C
8		D
15	16	E

A BOWERSVILLE NE (FAYETTE COUNTY)
B MILLEDGEVILLE NW (FAYETTE COUNTY)
C MILLEDGEVILLE NE (FAYETTE COUNTY)
8 BOWERSVILLE SE
D MILLEDGEVILLE SE (FAYETTE COUNTY)
15 SABINA NE
16 MEMPHIS NW
E MEMPHIS NE (FAYETTE COUNTY)

INDEX TO ADJOINING 3.75 MAPS

MILLEDGEVILLE SW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 9 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
CLARKSVILLE NW QUADRANGLE
SHEET NUMBER 10 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

A	3	4
B		11
C	17	18

A WAYNESVILLE SE (WARREN COUNTY)
3 NEW BURLINGTON SW
4 NEW BURLINGTON SE
B OREGONIA NE (WARREN COUNTY)
11 CLARKSVILLE NE
C OREGONIA SE (WARREN COUNTY)
17 CLARKSVILLE SW
18 CLARKSVILLE SE

INDEX TO ADJOINING 3.75 MAPS

CLARKSVILLE NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 10 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
CLARKSVILLE NE QUADRANGLE
SHEET NUMBER 11 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

3	4	5
10		12
17	18	19

3 NEW BURLINGTON SW
4 NEW BURLINGTON SE
5 PORT WILLIAM SW
10 CLARKSVILLE NW
12 WILMINGTON NW
17 CLARKSVILLE SW
18 CLARKSVILLE SE
19 WILMINGTON SW

INDEX TO ADJOINING 3.75 MAPS

CLARKSVILLE NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 11 OF 39

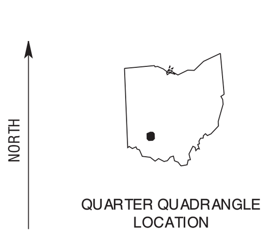
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
WILMINGTON NW QUADRANGLE
SHEET NUMBER 12 OF 39

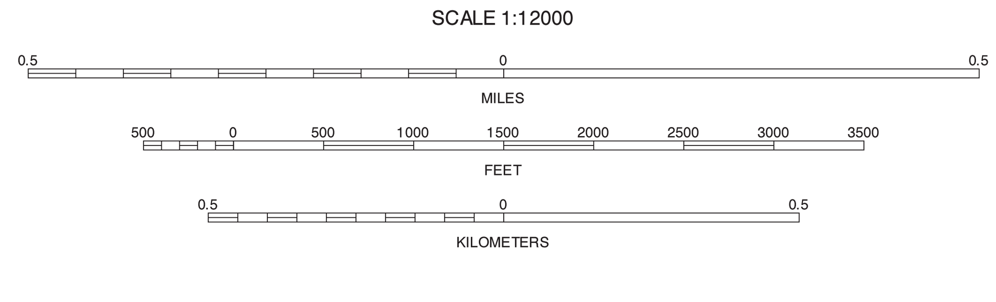
This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



4	5	6
11		13
18	19	20

4 NEW BURLINGTON SE
5 PORT WILLIAM SW
6 PORT WILLIAM SE
11 CLARKSVILLE NE
13 WILMINGTON NE
18 CLARKSVILLE SE
19 WILMINGTON SW
20 WILMINGTON SE

INDEX TO ADJOINING 3.75 MAPS

WILMINGTON NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 12 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
WILMINGTON NE QUADRANGLE
SHEET NUMBER 13 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

5	6	7
12		14
19	20	21

5 PORT WILLIAM SW
6 PORT WILLIAM SE
7 BOWERSVILLE SW
12 WILMINGTON NW
14 SABINA NW
19 WILMINGTON SW
20 WILMINGTON SE
21 SABINA SW

INDEX TO ADJOINING 3.75 MAPS

WILMINGTON NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 13 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
SABINA NW QUADRANGLE
SHEET NUMBER 14 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

6	7	8
13		15
20	21	22

6 PORT WILLIAM SE
7 BOWERSVILLE SW
8 BOWERSVILLE SE
13 WILMINGTON NE
15 SABINA NE
20 WILMINGTON SE
21 SABINA SW
22 SABINA SE

INDEX TO ADJOINING 3.75 MAPS

SABINA NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 14 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
SABINA NE QUADRANGLE
SHEET NUMBER 15 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

7	8	9
14		16
21	22	23

7 BOWERSVILLE SW
8 BOWERSVILLE SE
9 MILLEDGEVILLE SW
14 SABINA NW
16 MEMPHIS NW
21 SABINA SW
22 SABINA SE
23 MEMPHIS SW

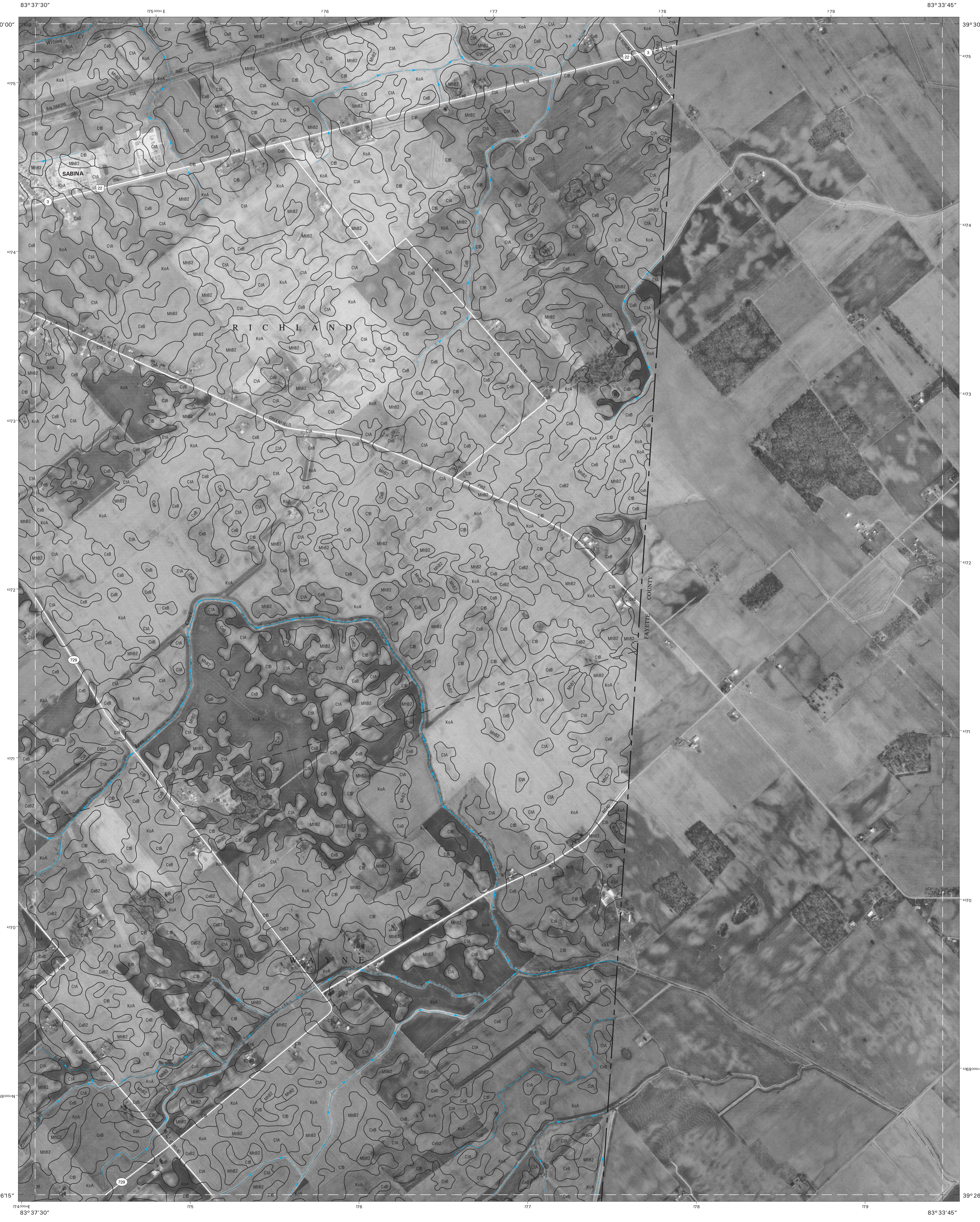
INDEX TO ADJOINING 3.75 MAPS

SABINA NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 15 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
MEMPHIS NW QUADRANGLE
SHEET NUMBER 16 OF 39



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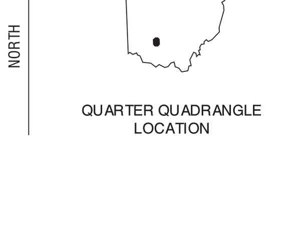
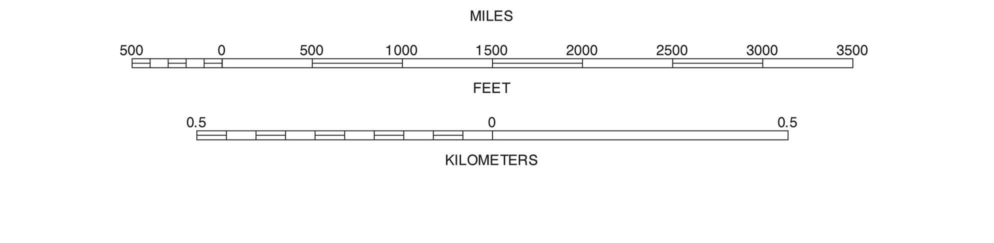
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



8	9	A	
15		B	
22	23	C	

8 BOWERSVILLE SE
9 MILLEDGEVILLE SW
A MILLEDGEVILLE SE (FAYETTE COUNTY)
15 SABINA NE
B MEMPHIS NE (FAYETTE COUNTY)
22 SABINA SE
23 MEMPHIS SW
C MEMPHIS SE (FAYETTE COUNTY)

INDEX TO ADJOINING 3.75 MAPS

MEMPHIS NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 16 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
CLARKSVILLE SW QUADRANGLE
SHEET NUMBER 17 OF 39

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

A	10	11
B		18
C	24	25

A OREGONIA NE (WARREN COUNTY)
10 CLARKSVILLE NW
11 CLARKSVILLE NE
B OREGONIA SE (WARREN COUNTY)
18 CLARKSVILLE SE
C PLEASANT PLAIN NE (WARREN COUNTY)
24 BLANCHESTER NW
25 BLANCHESTER NE

INDEX TO ADJOINING 3.75 MAPS

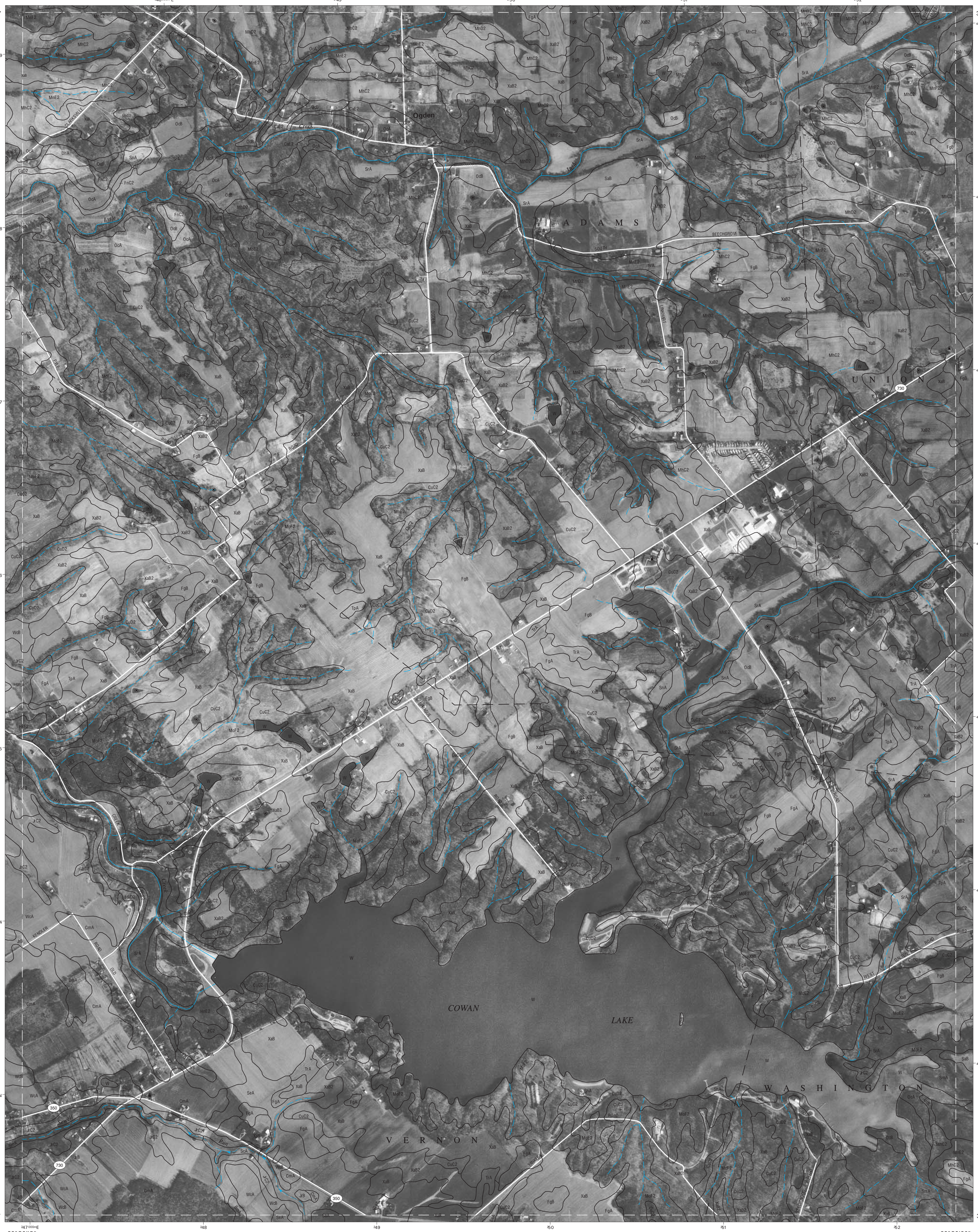
CLARKSVILLE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 17 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
CLARKSVILLE SE QUADRANGLE
SHEET NUMBER 18 OF 39

83° 56′15″ — 83° 52′30″
39° 26′15″ — 39° 22′30″



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 — 0 — 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 — 0 — 0.5 KILOMETERS

10	11	12
17		19
24	25	26

10 CLARKSVILLE NW
11 CLARKSVILLE NE
12 WILMINGTON NW
17 CLARKSVILLE SW
19 WILMINGTON SW
24 BLANCHESTER NW
25 BLANCHESTER NE
26 MARTINSVILLE NW

INDEX TO ADJOINING 3.75 MAPS

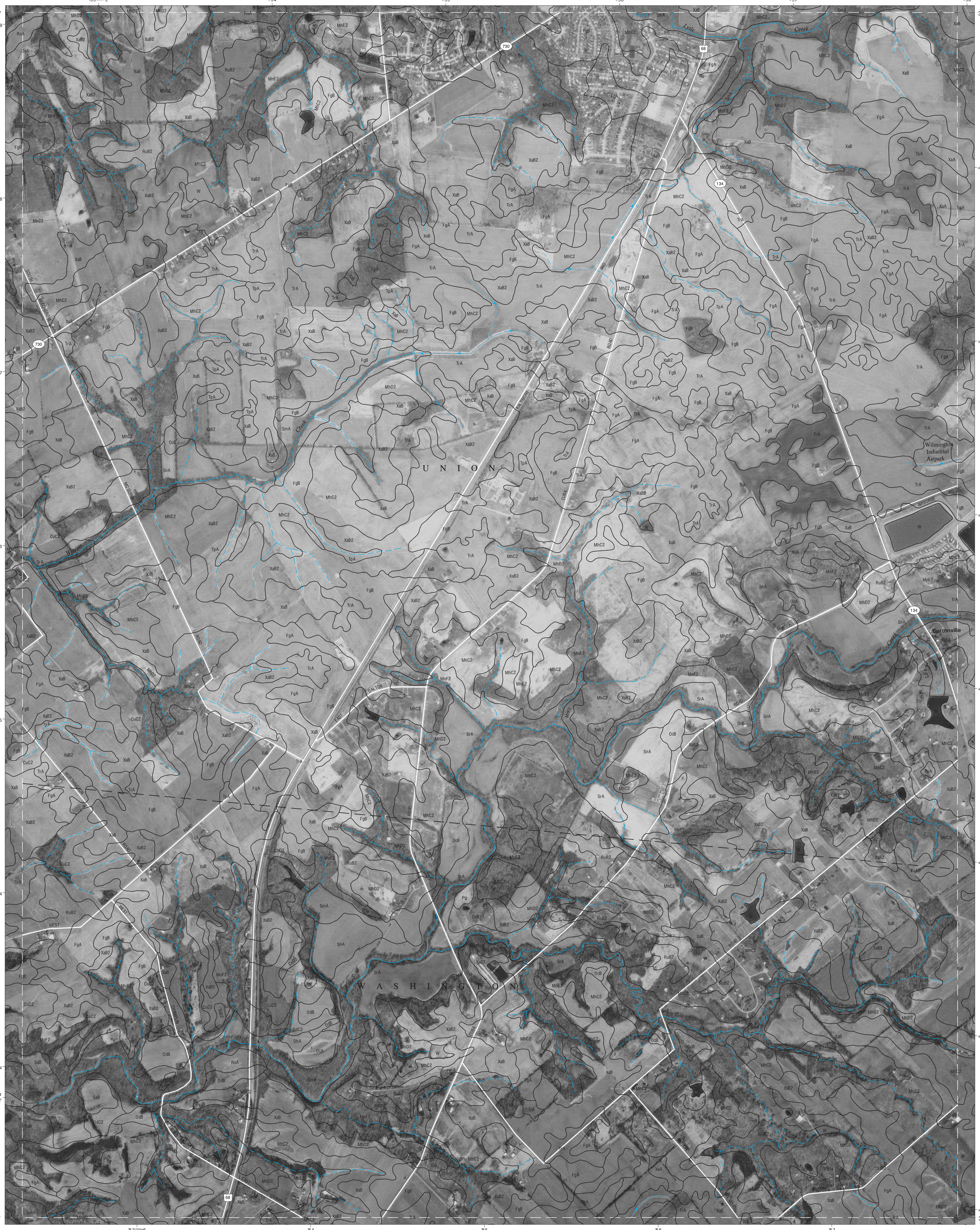
CLARKSVILLE SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 18 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
WILMINGTON SW QUADRANGLE
SHEET NUMBER 19 OF 39



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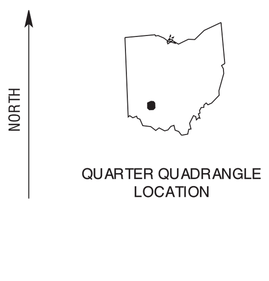
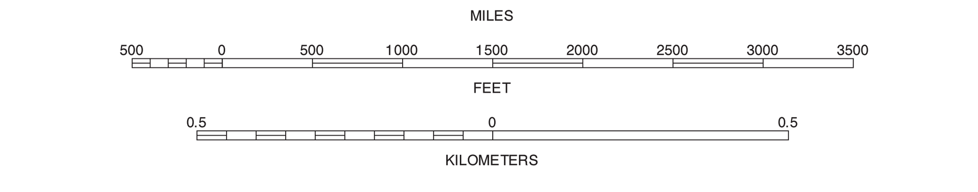
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



11	12	13
18		20
25	26	27

11 CLARKSVILLE NE
12 WILMINGTON NW
13 WILMINGTON NE
18 CLARKSVILLE SE
20 WILMINGTON SE
25 BLANCHESTER NE
26 MARTINSVILLE NW
27 MARTINSVILLE NE

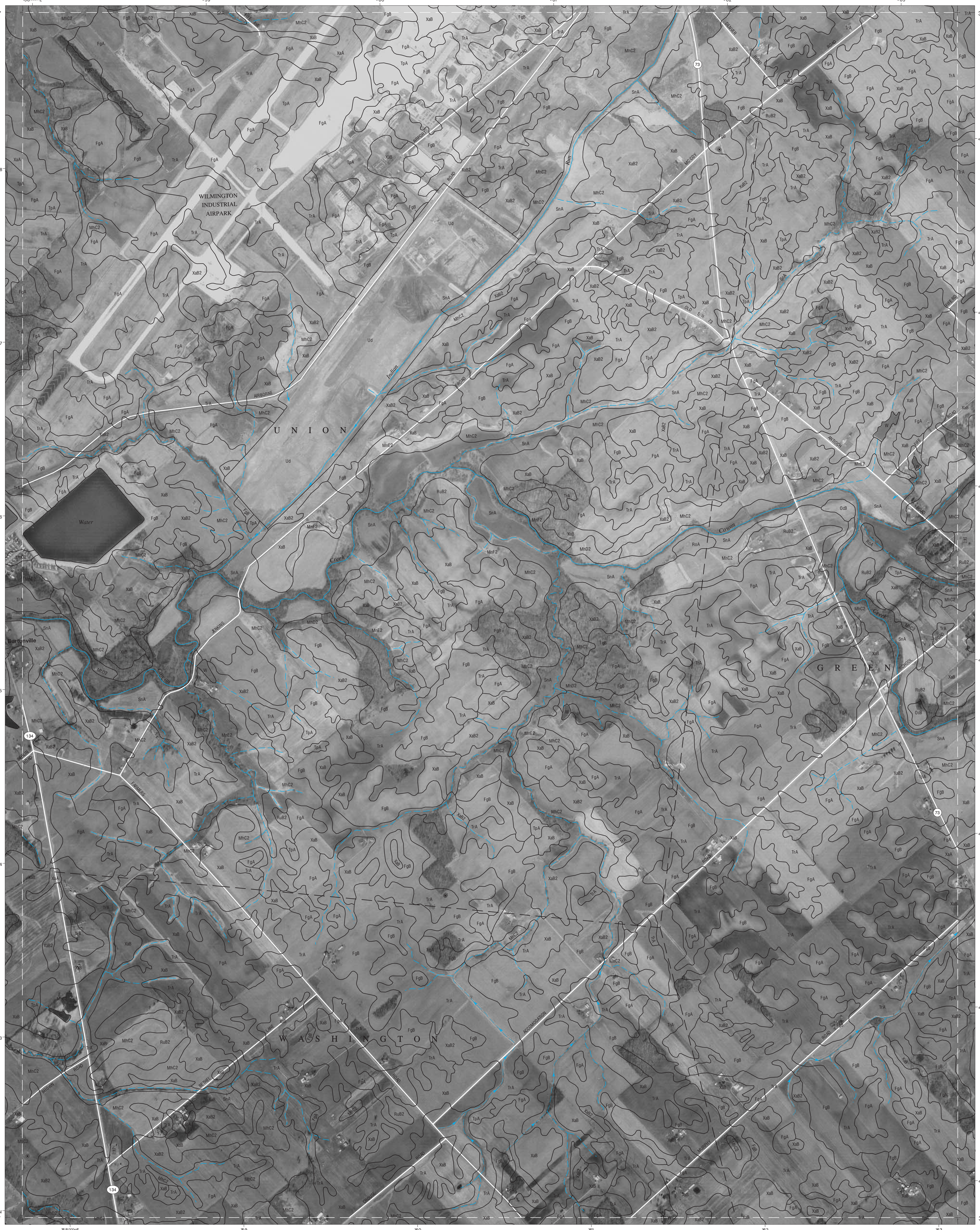
INDEX TO ADJOINING 3.75 MAPS

WILMINGTON SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 19 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
WILMINGTON SE QUADRANGLE
SHEET NUMBER 20 OF 39



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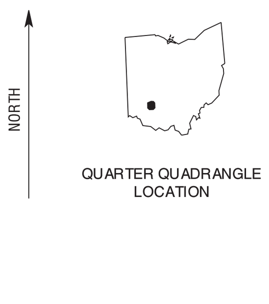
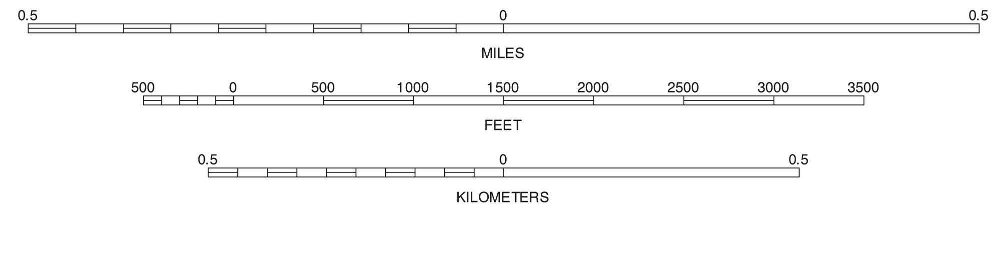
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



12	13	14	12 WILMINGTON NW
			13 WILMINGTON NE
			14 SABINA NW
19		21	19 WILMINGTON SW
			21 SABINA SW
26	27	28	26 MARTINSVILLE NW
			27 MARTINSVILLE NE
			28 NEW VIENNA NW

INDEX TO ADJOINING 3.75 MAPS

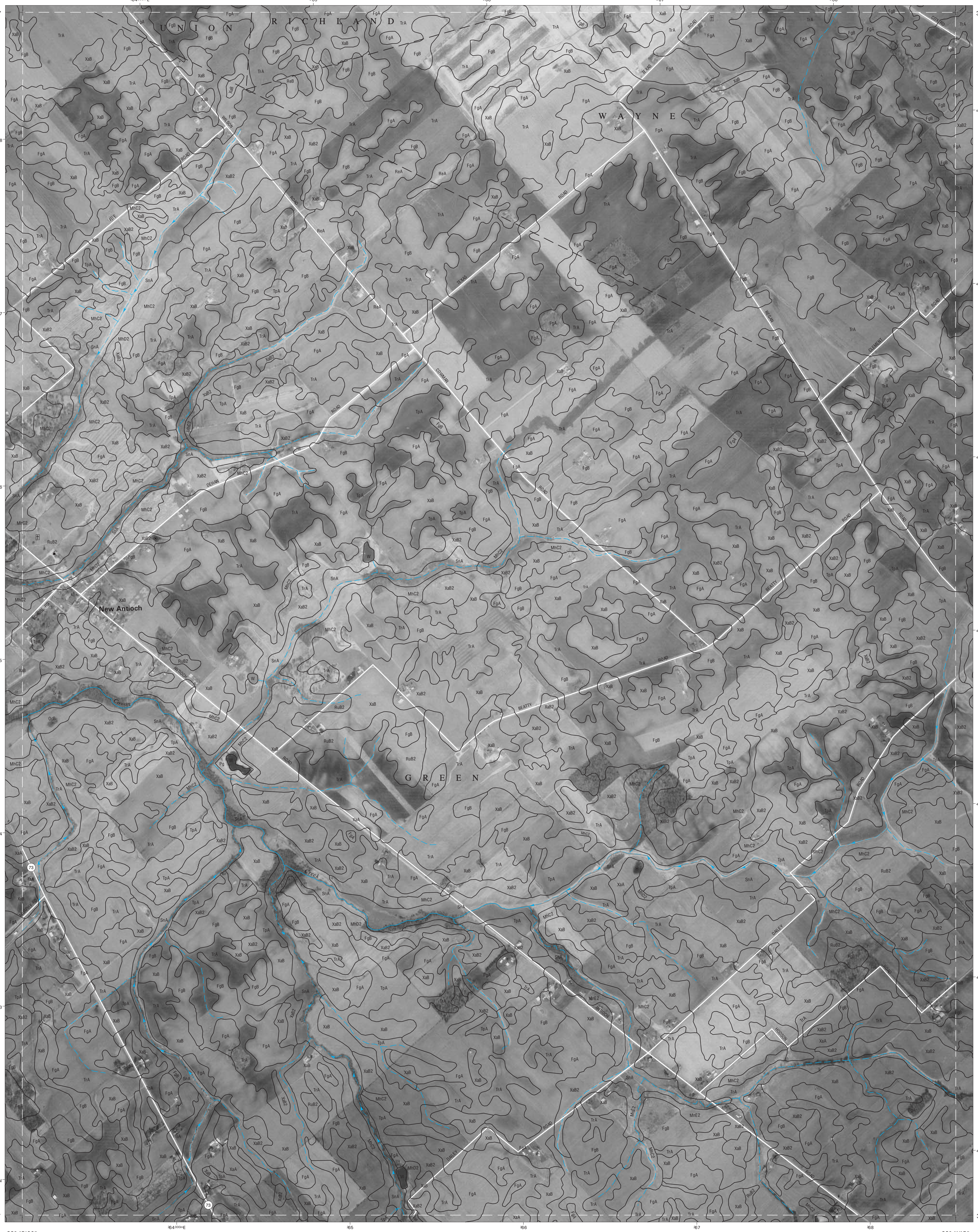
WILMINGTON SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 20 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
SABINA SW QUADRANGLE
SHEET NUMBER 21 OF 39



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

13	14	15
20		22
27	28	29

13 WILMINGTON NE
14 SABINA NW
15 SABINA NE
20 WILMINGTON SE
22 SABINA SE
27 MARTINSVILLE NE
28 NEW VIENNA NW
29 NEW VIENNA NE

INDEX TO ADJOINING 3.75 MAPS

SABINA SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 21 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

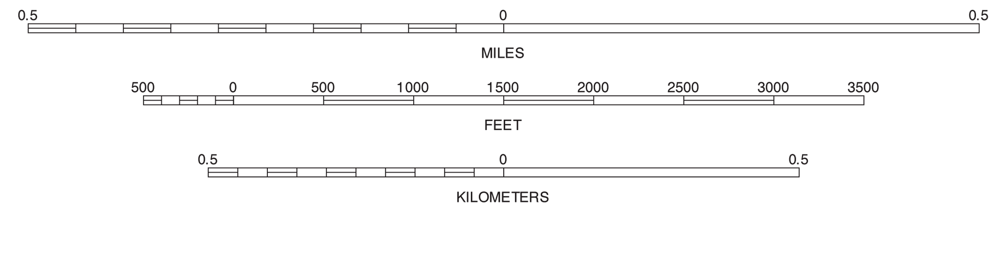
CLINTON COUNTY, OHIO
SABINA SE QUADRANGLE
SHEET NUMBER 22 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000



14	15	16
21		23
28	29	30

14 SABINA NW
15 SABINA NE
16 MEMPHIS NW
21 SABINA SW
23 MEMPHIS SW
28 NEW VIENNA NW
29 NEW VIENNA NE
30 LEESBURG NW

INDEX TO ADJOINING 3.75 MAPS

SABINA SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 22 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
MEMPHIS SW QUADRANGLE
SHEET NUMBER 23 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

15	16	A
22		B
29	30	C

15 SABINA NE
16 MEMPHIS NW
A MEMPHIS NE (FAYETTE COUNTY)
22 SABINA SE
B MEMPHIS SE (FAYETTE COUNTY)
29 NEW VIENNA NE
30 LEESBURG NW
C LEESBURG NE (FAYETTE COUNTY)

INDEX TO ADJOINING 3.75 MAPS

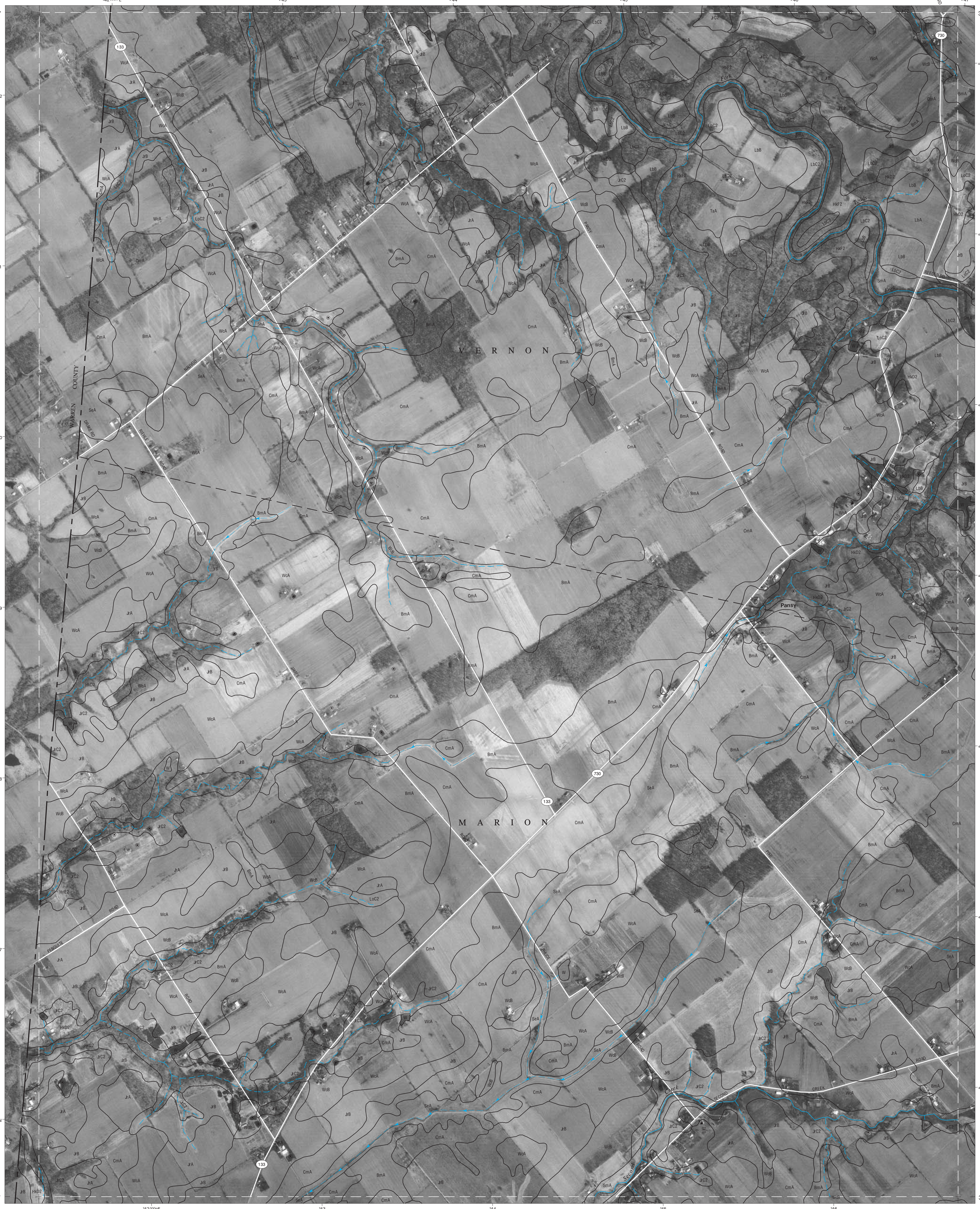
MEMPHIS SW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 23 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
BLANCHESTER NW QUADRANGLE (OVERSIZED)
SHEET NUMBER 24 OF 39



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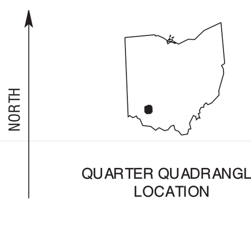
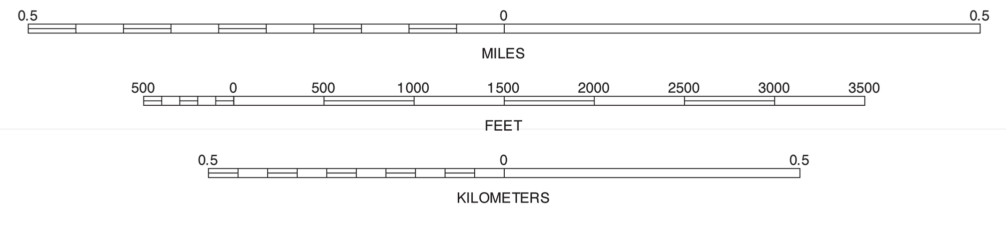
North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.





A	17	18
B		25
31	32	33

A OREGONIA SE (WARREN COUNTY)
17 CLARKSVILLE SW
18 CLARKSVILLE SE
B PLEASANT PLAIN NE (WARREN COUNTY)
25 BLANCHESTER NE
31 PLEASANT PLAIN SE
32 BLANCHESTER SW
33 BLANCHESTER SE

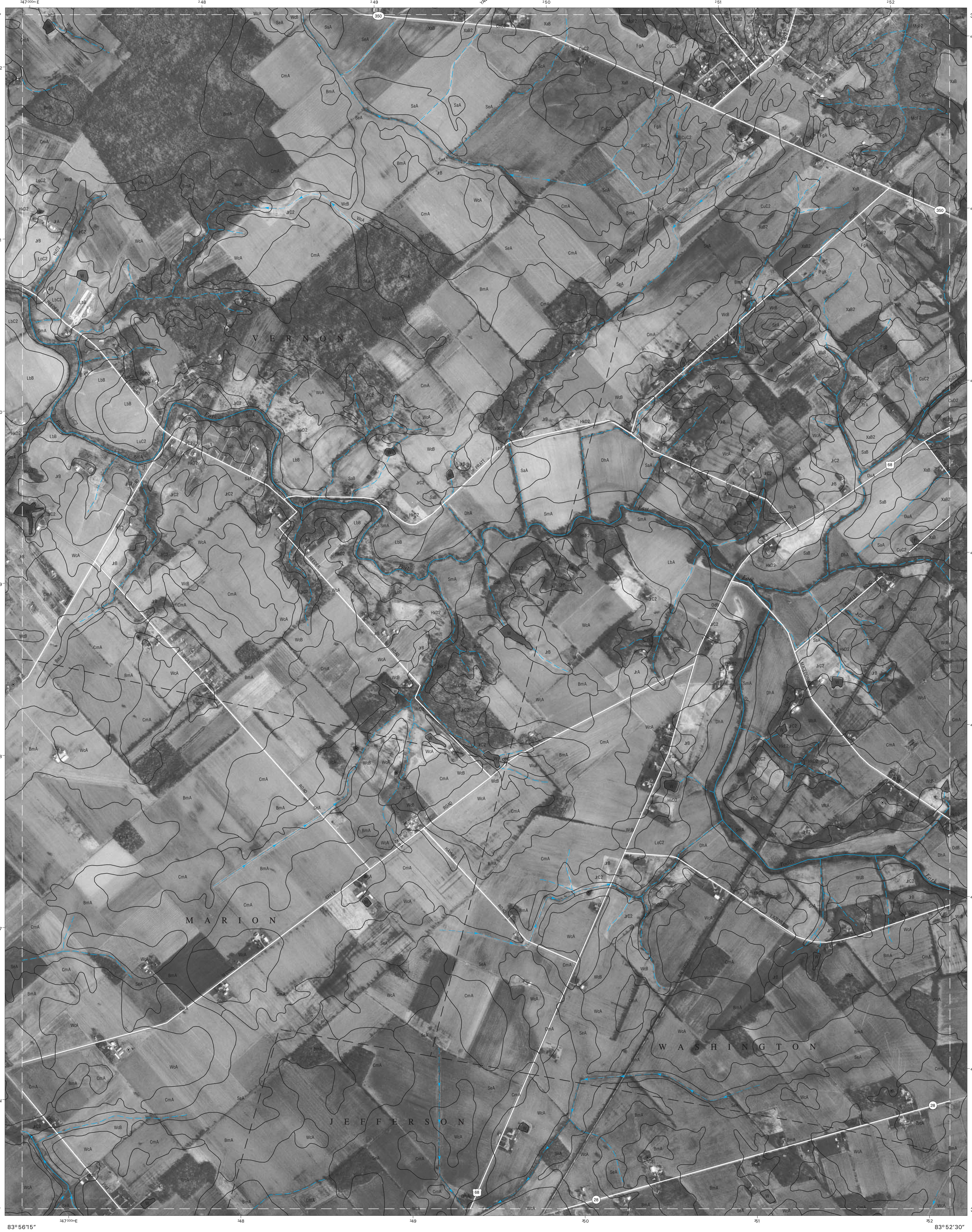
INDEX TO ADJOINING 3.75 MAPS

BLANCHESTER NW, (OVERSIZED) OHIO
3.75 MINUTE SERIES
SHEET NUMBER 24 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

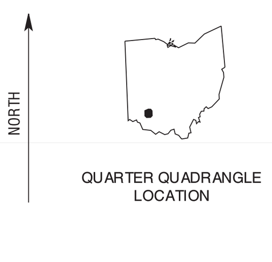
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
BLANCHESTER NE QUADRANGLE
SHEET NUMBER 25 OF 39



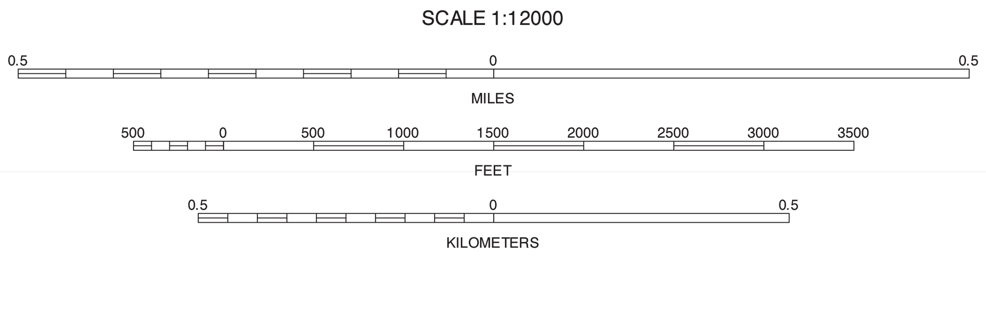
This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



17	18	19	17 CLARKSVILLE SW 18 CLARKSVILLE SE 19 WILMINGTON SW
24		26	24 BLANCHESTER NW 26 MARTINSVILLE NW 32 BLANCHESTER SW
32	33	34	33 BLANCHESTER SE 34 MARTINSVILLE SW

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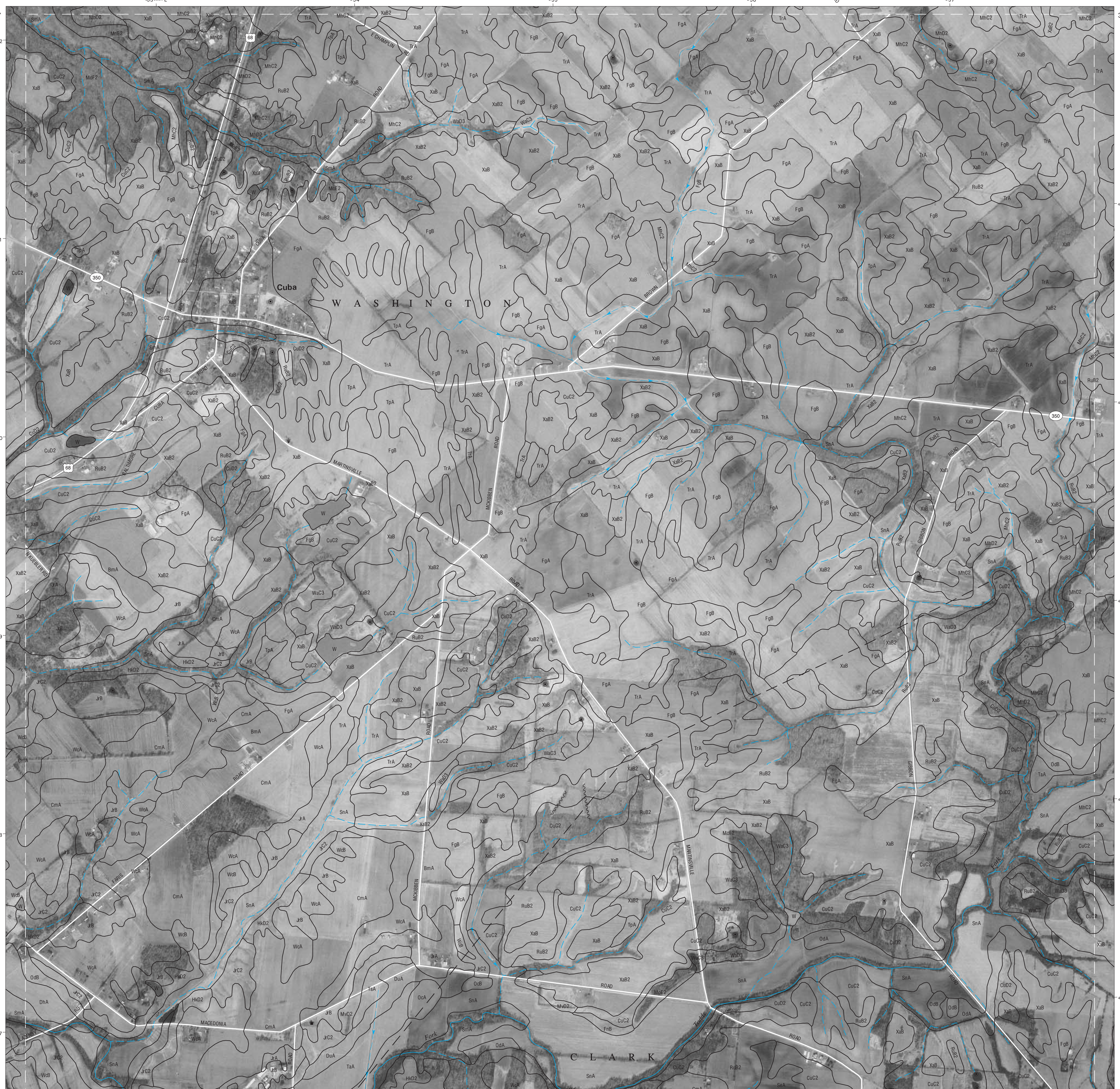
BLANCHESTER NE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 25 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
MARTINSVILLE NW QUADRANGLE
SHEET NUMBER 26 OF 39



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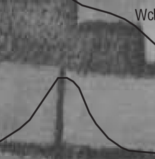
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

18	19	20
25		27
33	34	35

18 CLARKSVILLE SE
19 WILMINGTON SW
20 WILMINGTON SE
25 BLANCHESTER NE
27 MARTINSVILLE NE
33 BLANCHESTER SE
34 MARTINSVILLE SW
35 MARTINSVILLE SE

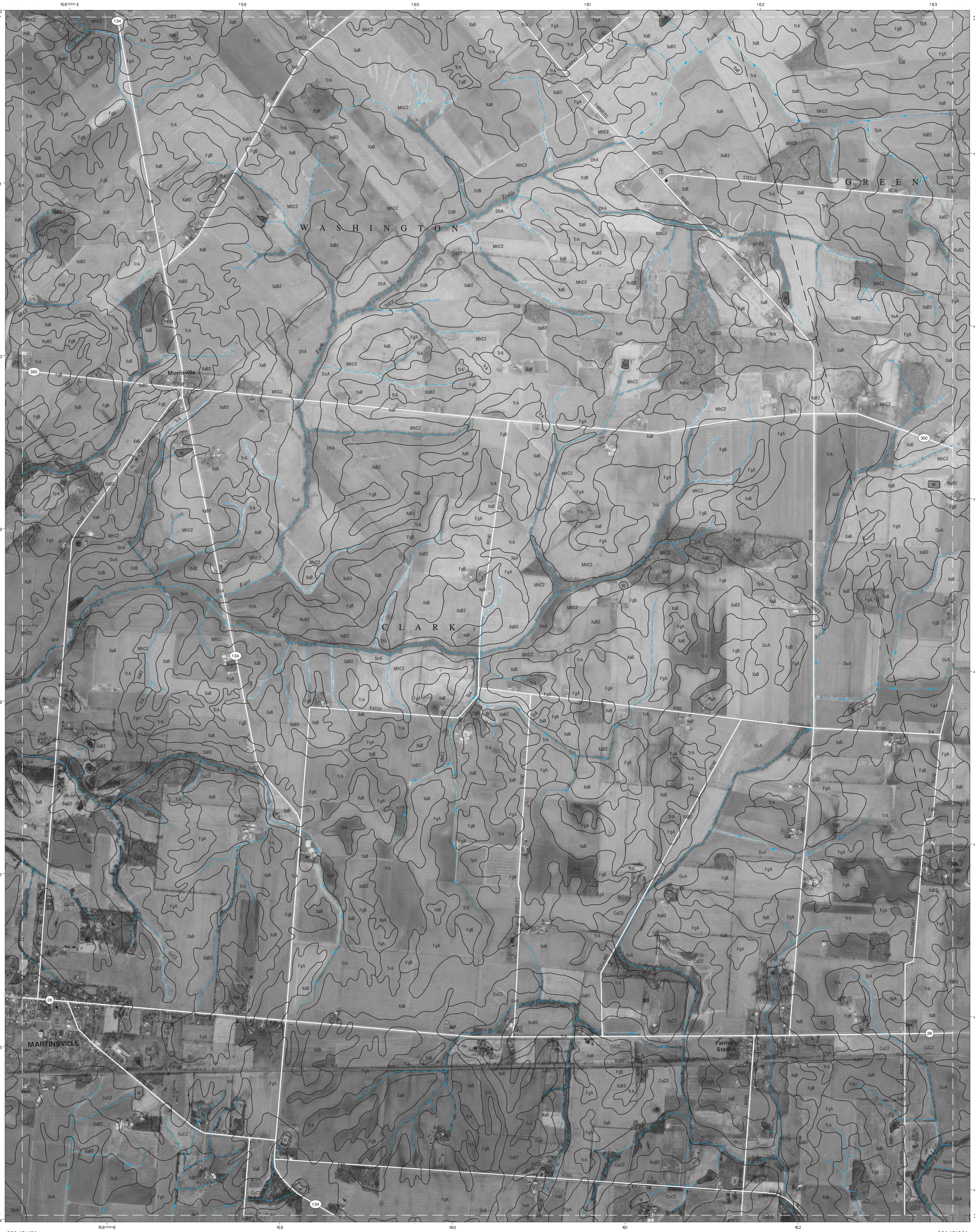
INDEX TO ADJOINING 3.75 MAPS

MARTINSVILLE NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 26 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
MARTINSVILLE NE QUADRANGLE
SHEET NUMBER 27 OF 39



This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

19	20	21
26		28
34	35	36

19 WILMINGTON SW
20 WILMINGTON SE
21 SABINA SW
26 MARTINSVILLE NW
28 NEW VIENNA NW
34 MARTINSVILLE SW
35 MARTINSVILLE SE
36 NEW VIENNA SW

INDEX TO ADJOINING 3.75 MAPS

MARTINSVILLE NE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 27 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
NEW VIENNA NW QUADRANGLE
SHEET NUMBER 28 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

20	21	22
27		29
35	36	A

20 WILMINGTON SE
21 SABINA SW
22 SABINA SE
27 MARTINSVILLE NE
29 NEW VIENNA NE
35 MARTINSVILLE SE
36 NEW VIENNA SW
A NEW VIENNA SE (HIGHLAND COUNTY)

INDEX TO ADJOINING 3.75 MAPS

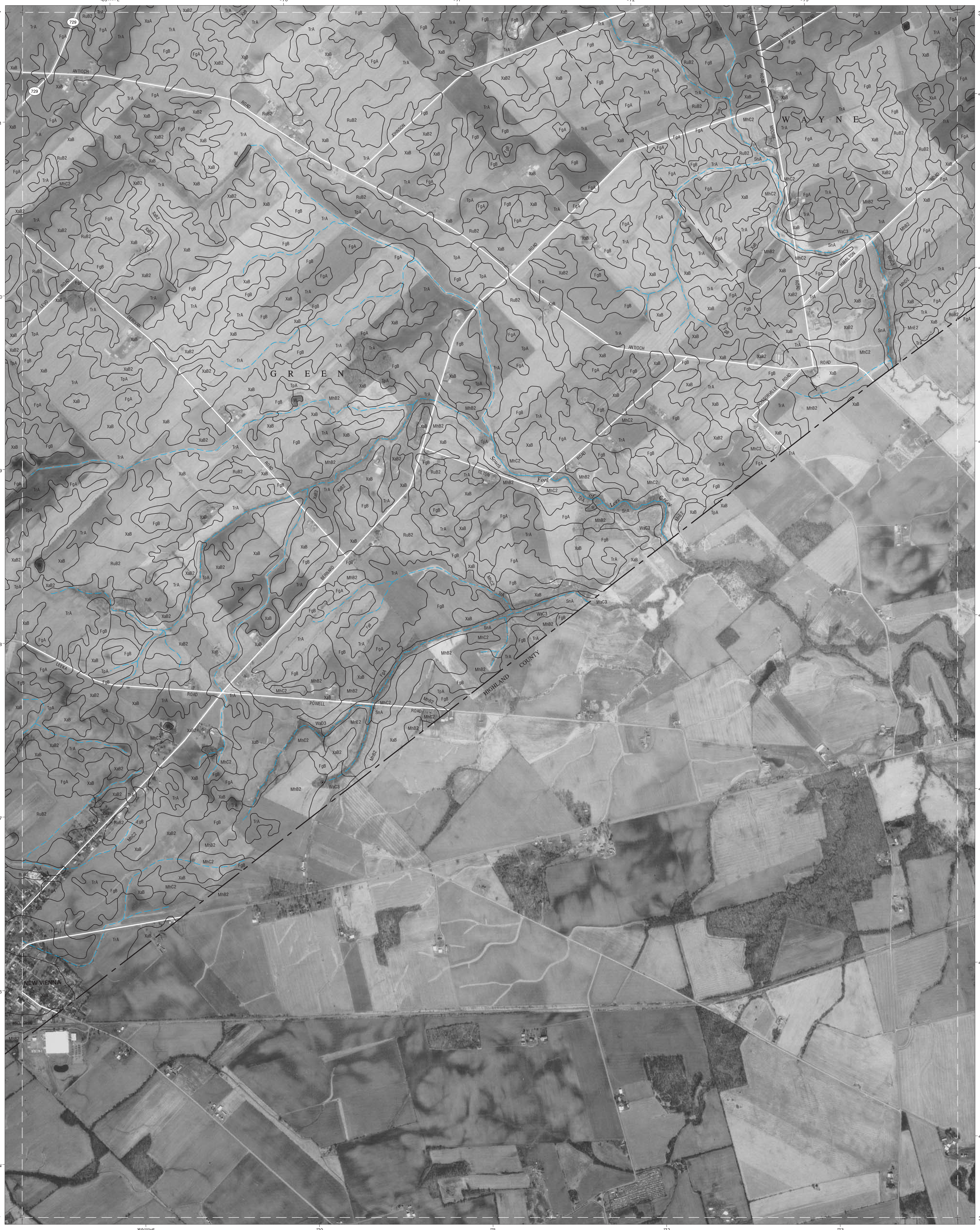
NEW VIENNA NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 28 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
NEW VIENNA NE QUADRANGLE
SHEET NUMBER 29 OF 39



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North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

21	22	23
28		30
36	A	B

21 SABINA SW
22 SABINA SE
23 MEMPHIS SW
28 NEW VIENNA NW
30 LEESBURG NW
36 NEW VIENNA SW
A NEW VIENNA SE (HIGHLAND COUNTY)
B LEESBURG SW (HIGHLAND COUNTY)

INDEX TO ADJOINING 3.75 MAPS

NEW VIENNA NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 29 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
LEESBURG NW QUADRANGLE
SHEET NUMBER 30 OF 39

83° 37′ 30″ 83° 33′ 45″
39° 22′ 30″ 39° 22′ 30″

39° 18′ 45″ 39° 18′ 45″
83° 37′ 30″ 83° 33′ 45″

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

22	23	A
29		B
C	D	E

22 SABINA SE
23 MEMPHIS SW
A MEMPHIS SE (FAYETTE COUNTY)
29 NEW VIENNA NE
B LEESBURG NE (HIGHLAND COUNTY)
C NEW VIENNA SE (HIGHLAND COUNTY)
D LEESBURG SW (HIGHLAND COUNTY)
E LEESBURG SE (HIGHLAND COUNTY)

INDEX TO ADJOINING 3.75 MAPS

LEESBURG NW, OHIO

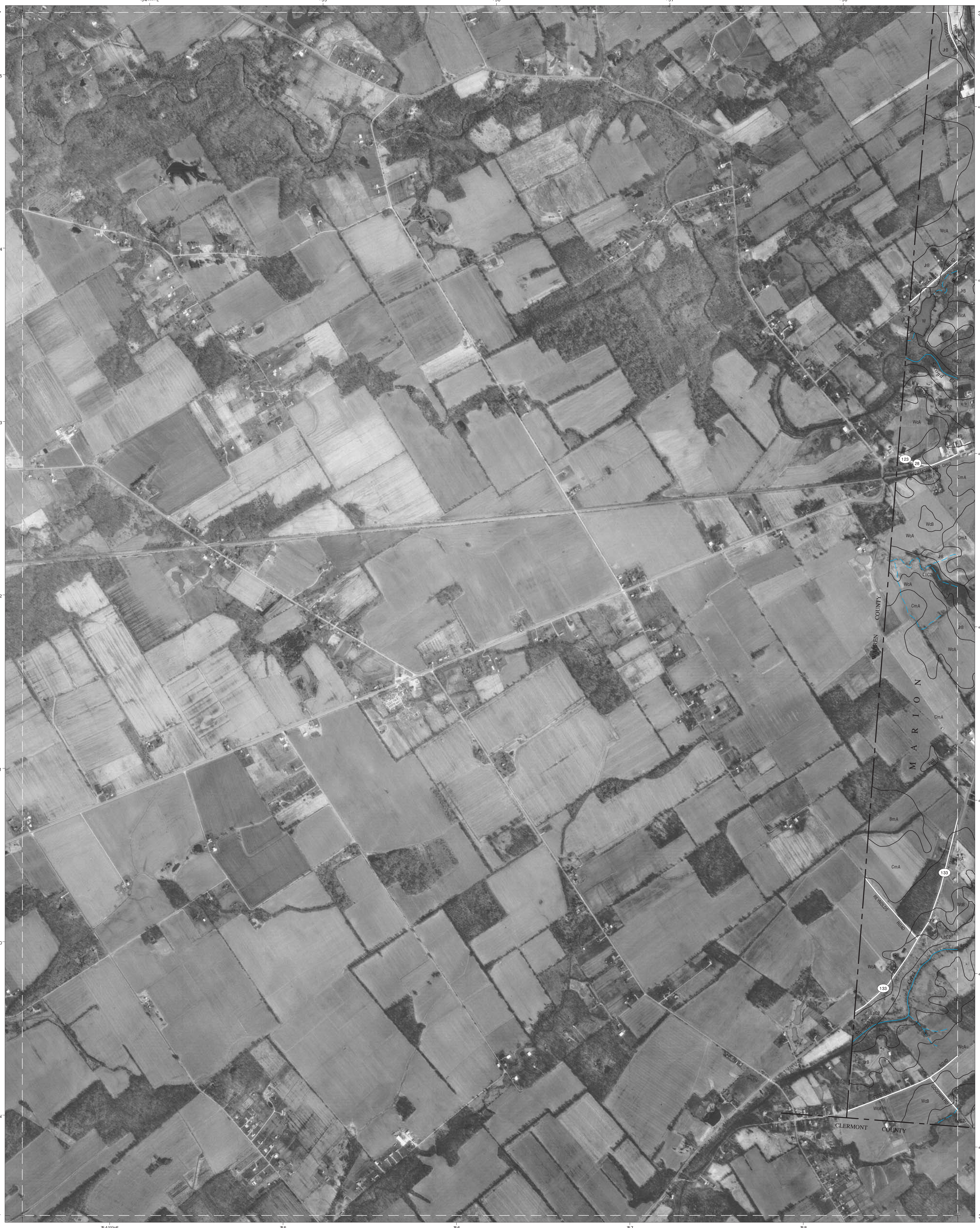
3.75 MINUTE SERIES
SHEET NUMBER 30 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
PLEASANT PLAIN SE QUADRANGLE
SHEET NUMBER 31 OF 39

84° 03′45″ | 39°18′45″ | 84° 00′00″ | 39°18′45″

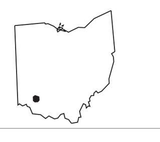


39°15′00″ | 84° 03′45″ | 84° 00′00″ | 39°15′00″

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 16.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE
LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

A	B	24
C		32
D	E	F

A PLEASANT PLAIN NW (WARREN COUNTY)
B PLEASANT PLAIN NE (WARREN COUNTY)
24 BLANCHESTER NW
C PLEASANT PLAIN SW (WARREN COUNTY)
32 BLANCHESTER SW
D NEWTONSVILLE NW (CLERMONT COUNTY)
E NEWTONSVILLE NE (CLERMONT COUNTY)
F FAYETTEVILLE NW (BROWN COUNTY)

INDEX TO ADJOINING 3.75 MAPS

PLEASANT PLAIN SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 31 OF 39

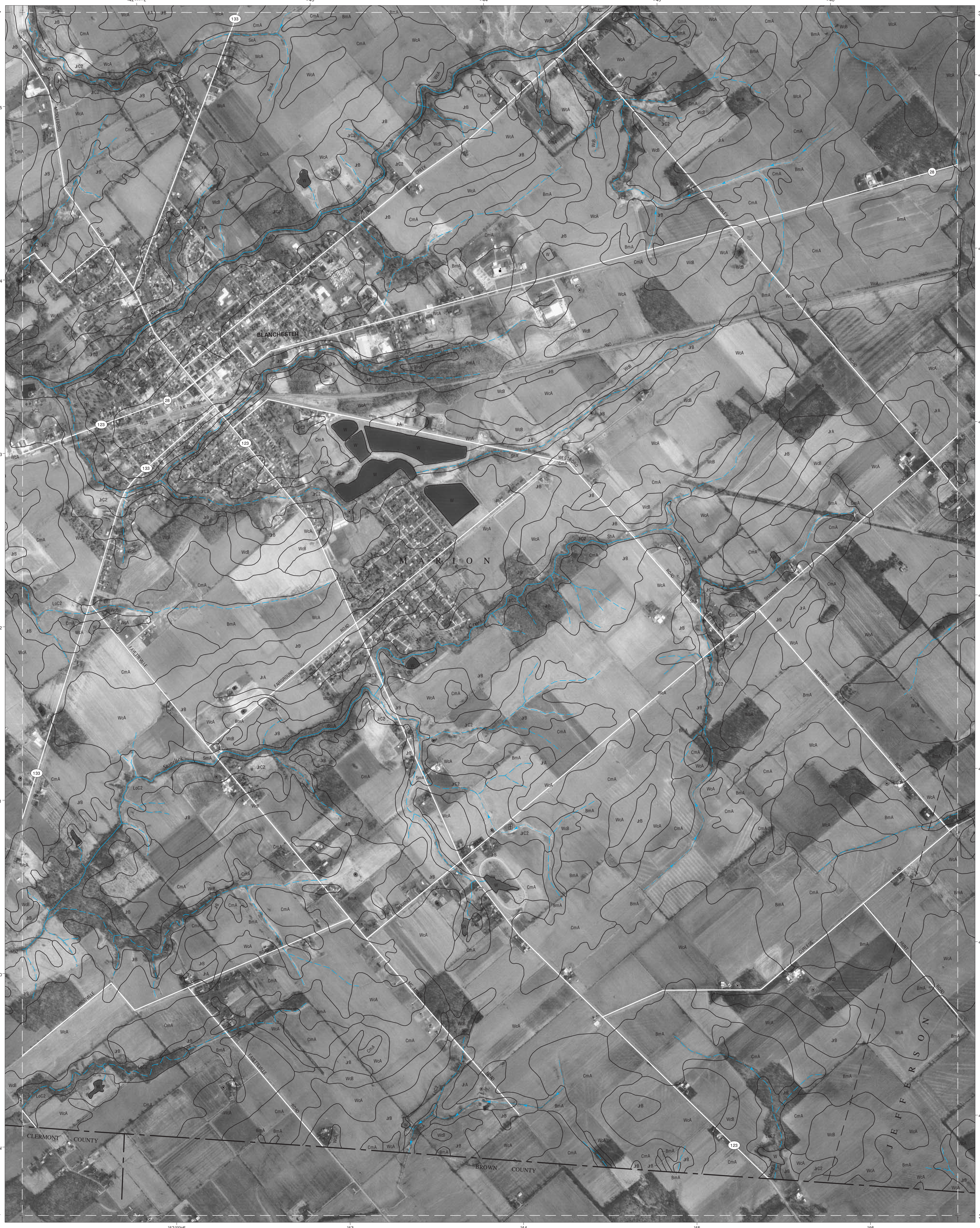
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
BLANCHESTER SW QUADRANGLE
SHEET NUMBER 32 OF 39

84° 00′00″ 83° 56′15″

39°18′45″ 39°18′45″



39°15′00″ 39°15′00″

84° 00′00″ 83° 56′15″

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

A	24	25
31		33
B	C	37

A PLEASANT PLAIN NE (WARREN COUNTY)
24 BLANCHESTER NW
25 BLANCHESTER NE
31 PLEASANT PLAIN SE
33 BLANCHESTER SE
B NEWTONSVILLE NE (CLERMONT COUNTY)
C FAYETTEVILLE NW (BROWN COUNTY)
37 FAYETTEVILLE NE

INDEX TO ADJOINING 3.75 MAPS

BLANCHESTER SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 32 OF 39

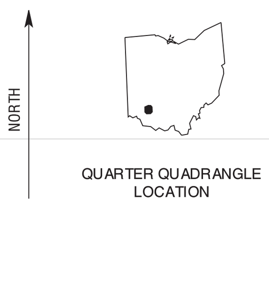
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
BLANCHESTER SE QUADRANGLE
SHEET NUMBER 33 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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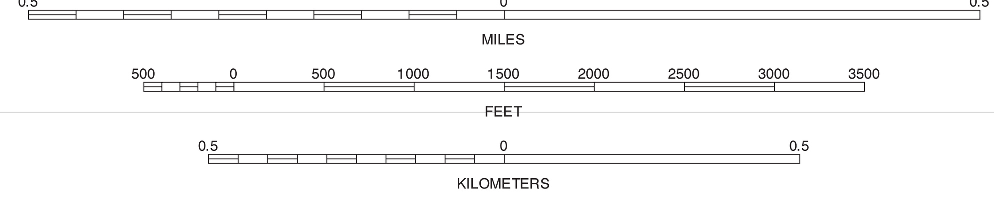

24	25	26
32		34
A	37	38

24 BLANCHESTER NW
25 BLANCHESTER NE
26 MARTINSVILLE NW
32 BLANCHESTER SW
34 MARTINSVILLE SW
A FAYETTEVILLE NW (BROWN COUNTY)
37 FAYETTEVILLE NE
38 LYNCHBURG NW

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BLANCHESTER SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 33 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
MARTINSVILLE SW QUADRANGLE
SHEET NUMBER 34 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

25	26	27
33		35
37	38	39

25 BLANCHESTER NE
26 MARTINSVILLE NW
27 MARTINSVILLE NE
33 BLANCHESTER SE
35 MARTINSVILLE SE
37 FAYETTEVILLE NE
38 LYNCHBURG NW
39 LYNCHBURG NE

INDEX TO ADJOINING 3.75 MAPS

MARTINSVILLE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 34 OF 39

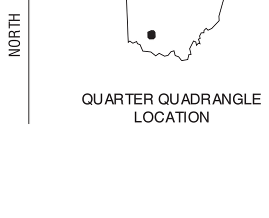
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
MARTINSVILLE SE QUADRANGLE
SHEET NUMBER 35 OF 39

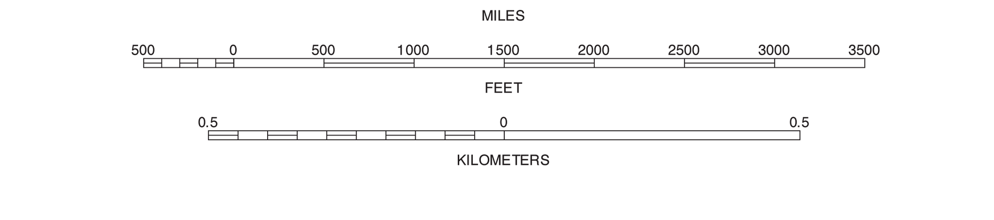
This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



26	27	28
34		36
38	39	A

26 MARTINSVILLE NW
27 MARTINSVILLE NE
28 NEW VIENNA NW
34 MARTINSVILLE SW
36 NEW VIENNA SW
38 LYNCHBURG NW
39 LYNCHBURG NE
A NEW MARKET NW (HIGHLAND COUNTY)

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MARTINSVILLE SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 35 OF 39

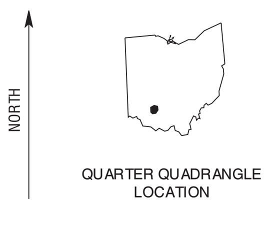
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
NEW VIENNA SW QUADRANGLE
SHEET NUMBER 36 OF 39

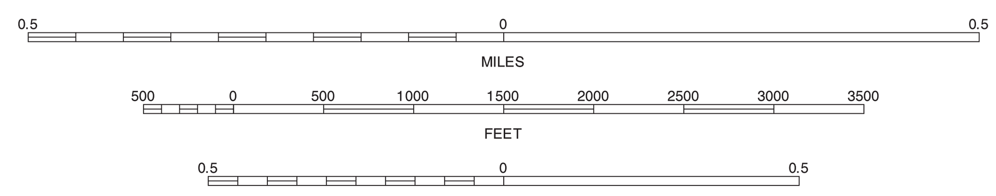
This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



27	28	29
35		A
39	B	C

27 MARTINSVILLE NE
28 NEW VIENNA NW
29 NEW VIENNA NE
35 MARTINSVILLE SE
A NEW VIENNA SE (HIGHLAND COUNTY)
39 LYNCHBURG NE
B NEW MARKET NW (HIGHLAND COUNTY)
C NEW MARKET NE (HIGHLAND COUNTY)

INDEX TO ADJOINING 3.75 MAPS

NEW VIENNA SW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 36 OF 39

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

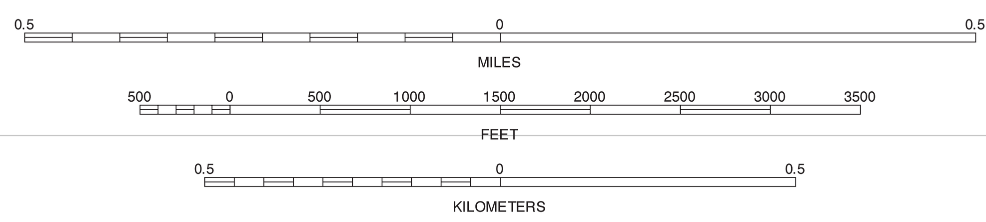
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
FAYETTEVILLE NE QUADRANGLE
SHEET NUMBER 37 OF 39

This soil survey was compiled to 1988-89 aerial photographs by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and the Ohio Department of Natural Resources, Division of soil and Water Conservation, Soil Inventory and Evaluation Section. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1994 aerial photography. Hydrography was acquired from NRCS. Cultural features were acquired from NRCS.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:12000



32	33	34	
A		38	
B	C	D	

32 BLANCHESTER SW
33 BLANCHESTER SE
34 MARTINSVILLE SW
A FAYETTEVILLE NW (BROWN COUNTY)
38 LYNCHBURG NW
B FAYETTEVILLE SW (BROWN COUNTY)
C FAYETTEVILLE SE (BROWN COUNTY)
D LYNCHBURG SW (HIGHLAND COUNTY)

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FAYETTEVILLE NE, OHIO

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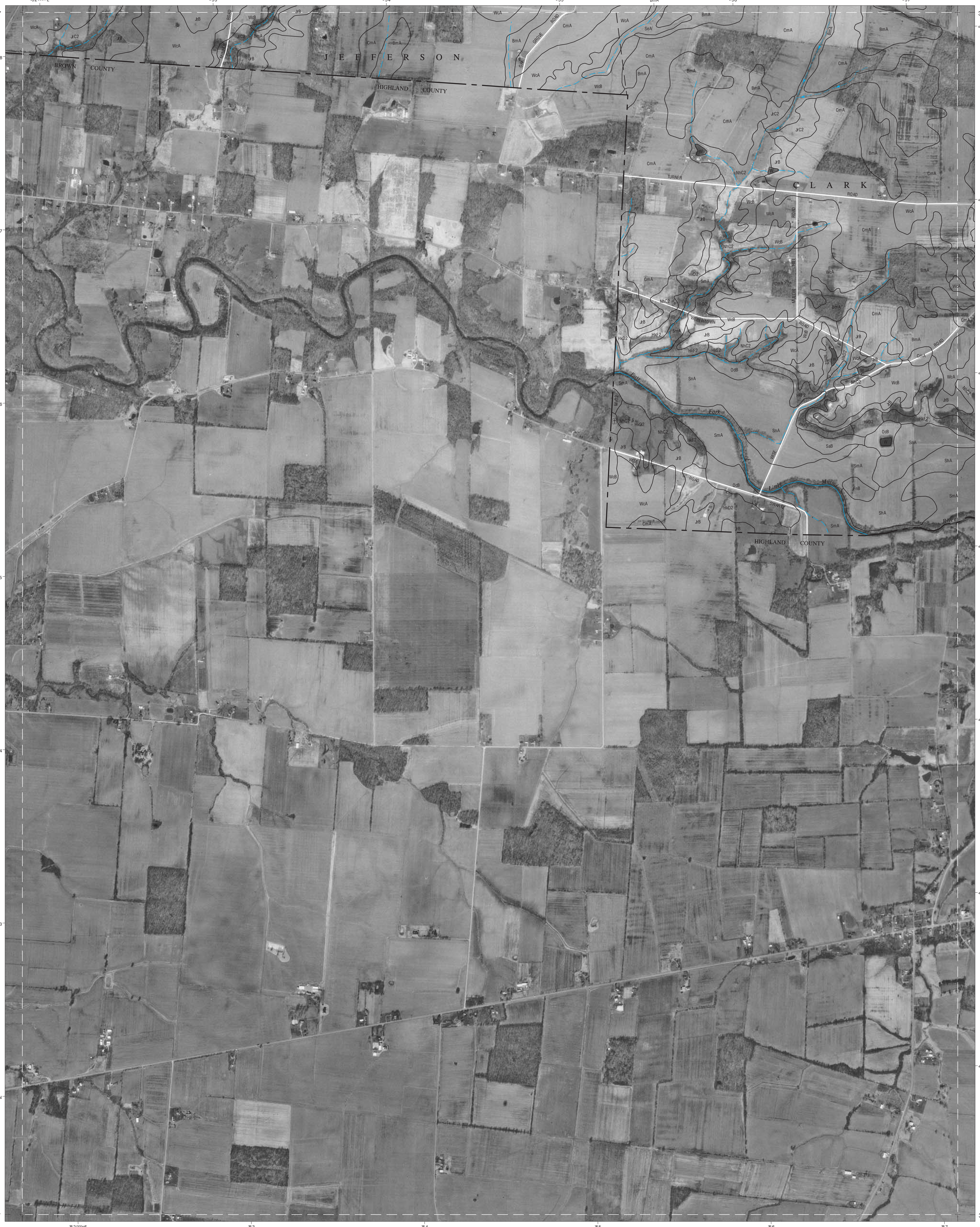
NATURAL RESOURCES CONSERVATION SERVICE

CLINTON COUNTY, OHIO
LYNCHBURG NW QUADRANGLE
SHEET NUMBER 38 OF 39



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NORTH

QUARTER QUADRANGLE
LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

33	34	35
37		39
A	B	C

33 BLANCHESTER SE
34 MARTINSVILLE SW
35 MARTINSVILLE SE
37 FAYETTEVILLE NE
39 LYNCHBURG NE
A FAYETTEVILLE SE (BROWN COUNTY)
B LYNCHBURG SW (HIGHLAND COUNTY)
C LYNCHBURG SE (HIGHLAND COUNTY)

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LYNCHBURG NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 38 OF 39

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CLINTON COUNTY, OHIO
LYNCHBURG NE QUADRANGLE
SHEET NUMBER 39 OF 39

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NORTH

QUARTER QUADRANGLE
LOCATION

SCALE 1:12000

0.5 — 0 — 0.5
MILES

500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500
FEET

0.5 — 0 — 0.5
KILOMETERS

34	35	36
38		A
B	C	D

34 MARTINSVILLE SW
35 MARTINSVILLE SE
36 NEW VIENNA SW
38 LYNCHBURG NW
A NEW MARKET NW (HIGHLAND COUNTY)
B LYNCHBURG SW (HIGHLAND COUNTY)
C LYNCHBURG SE (HIGHLAND COUNTY)
D NEW MARKET SW (HIGHLAND COUNTY)

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LYNCHBURG NE, OHIO

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